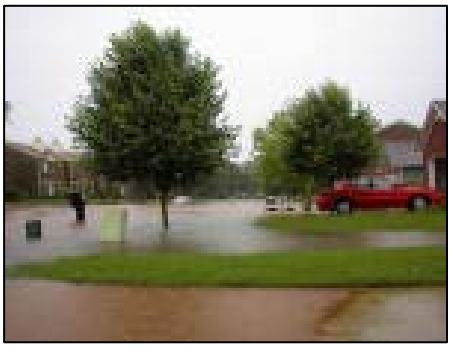

MACON COUNTY NATURAL HAZARD MITIGATION PLAN

SEPTEMBER 2004

Prepared By

South Central Alabama Development Commission

5900 Carmichael Place

Montgomery, Alabama 36117

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ACKNOWLEDGEMENTS

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Additional copies of the Macon County Natural Hazard Mitigation Plan are available by contacting:

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PURPOSE AND PROCESS

Natural hazard mitigation is the process of reducing or eliminating the loss of life and property damage resulting from natural disaster events. This process begins with the hazard mitigation plan in which hazards are identified and analyzed to determine their potential impact on an area and steps are outlined to avoid or minimize the undesired effects. The overall purpose of the hazard mitigation plan and planning process is the resulting mitigation strategy, which outlines a coordinated implementation of action steps with as little conflict and/or duplication of efforts as possible by the responsible agencies and jurisdictions. During the Macon County hazard mitigation planning process, the following three goals were established to guide mitigation efforts:

- Promote natural hazard mitigation as a means to decrease loss of life, property damage and economic loss during a disaster occurrence.
- Provide on-going support of the Macon County Emergency Management efforts to make Macon County and its municipalities less vulnerable to natural disasters.
- Educate the general population about natural hazards and hazard mitigation options.

This plan includes a profile of participating jurisdictions, the identification of natural hazards that are deemed to be a threat to the area, an assessment and analysis of the risks and vulnerability of each jurisdiction, a strategy for long and short mitigation of identified natural hazards, and a plan for on-going review and maintenance of the *Macon County Natural Hazard Mitigation Plan*. As such, this plan follows the requirements for local mitigation planning as required under Section 322 of the Stafford Act (42U.S.C. 5165) and 44 CFR Part 201 as the necessary components of a local hazard mitigation plan.

In March 2003, The Macon County Emergency Management Agency (EMA) contracted with the South Central Alabama Development Commission (SCADC) to outline a local participation and planning process and prepare the *Macon County Natural Hazard Mitigation Plan*. Funding for the project was provided through a grant from the Alabama Emergency Management Agency (AEMA) Pre-Disaster Mitigation Program with matching funds provided by the Macon County EMA.

1.1 Authority

Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-228, as amended), Title 44 of the Code of Federal Regulations (CFR), as amended by Section 201 of the Disaster Mitigation Act of 2000, provides the framework for state and local governments to evaluate and mitigate all hazards as a condition of receiving Federal disaster assistance. A major requirement of the law is the development of a local hazard mitigation plan.

Exercising the authority and requirements of these laws, adoption of the *Macon County Natural Hazard Mitigation Plan* by participating jurisdictions assures continuing eligibility for Federal Emergency Management Agency (FEMA) grant assistance to these jurisdictions, including the Hazard Mitigation Grant Program, the Pre-Disaster Mitigation Grant Program, the Flood Mitigation Assistance Program, and other federally-funded programs.

1.2 Jurisdictions

The *Macon County Natural Hazard Mitigation Plan* is multi-jurisdictional in scope, covering Macon County in its entirety including the unincorporated areas and the participating municipalities of Franklin, Notasulga, Shorter, and Tuskegee. It fulfills the requirements of the Sections 201.6(a)(3) and 201.6(c)(5) of the *Disaster Mitigation Act of 2000* as administered by the Alabama Emergency Management Agency (AEMA) and FEMA, Region IV, for multi-jurisdictional planning participation and adoption. This plan has been reviewed and adopted by the five participating local governments located within Macon County. Local resolutions documenting adoption of the *Macon County Natural Hazard Mitigation Plan* can be found in Appendix A: Local Resolutions of Adoption by Participating Jurisdictions.

1.3 Participation

All jurisdictions covered under the Macon County Natural Hazard Mitigation Plan were required to participate in the planning process and did so by representation on the hazard mitigation planning committee. These jurisdictions include the Towns of Franklin, Notasulga and Shorter, the City

of Tuskegee and the unincorporated parts of Macon County. Those representatives who were unable to attend the committee meetings were afforded the opportunity to participate by mailing all meeting summaries and handouts to all committee members following each meeting. At the very least, each jurisdiction has participated through a formal resolution adopting the plan following a presentation of plan contents by the Macon County EMA.

The participation plan for the Macon County hazard mitigation planning process included two components: committee and public participation. The committee participation component included establishing a committee, setting a meeting schedule and meeting notification, tracking participation and follow-up measures. The public participation component included building an awareness of the planning process, public workshops, and opportunities for plan review and comments. A description of each of the participation components follows.

Because Macon County has a standing Local Emergency Planning Committee (LEPC) whose purpose is to address hazardous substances, emergency planning, and health and environmental risks, it was decided that the LEPC would serve as the hazard mitigation planning committee. There are 53 members on the standing Macon County LEPC and each of the governmental jurisdictions is represented with both elected officials and staff and/or board members. Other representation on the LEPC includes emergency services, law enforcement, medical services, utilities, education, business and industry, forestry, agriculture, social services and the media. Because of the high number of members on the LEPC, a core committee was formed of governmental jurisdiction committee members for purposes of tracking participation and planning follow-up measures. The membership of the Macon County LEPC is in accordance with the requirements of Section 44 CFR 201.6(b)(2) for a multi-jurisdictional plan as demonstrated in Figure 1, which lists the LEPC members and who they represent.

Other stakeholders in the *Macon County Natural Hazard Mitigation Plan* were also invited to participate in the planning process. These agencies were mostly state or federal in nature, or other local citizen organizations. Stakeholder agencies included Alabama Power, Dixie Electric, Alagasco, Alabama Department of Transportation – Sixth Division, Tuskegee-Macon County YMCA, Alabama Emergency Management Agency, Tuskegee Area Chamber of Commerce, Federal Emergency Management Agency – Region IV, Army Corps of Engineers, Economic Development Administration, Alabama Department of Environmental Management, Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Geological Survey – Office of Water Resources, Geological Survey of Alabama, National Weather Service, Macon County Natural Resource and Conservation Service, and the Macon County Cooperative Extension System.

Figure 1:

Macon County Local Emergency Planning Committee
Membership and Representation

Macon County
Jesse Upshaw, Chair, County Commission
Dennis Bradford, Macon County Engineer
R. E. Corbitt, Jr., Revenue Commissioner
William Gunn, Director, Emergency Management Agency
Febreau Holston, Human Resources
Janet Spears-Turk, County Attorney
David Warren, Macon County Law Enforcement Center

Town of Franklin
Rufus Carson, Mayor
John Johnson, Police Department

Town of Notasulga
T. Louise Ramsey, Mayor
J.W. Tapley, Police Department

Town of Shorter
Willie Mae Powell, Mayor
Sandor Maloy, Police Department

City of Tuskegee
Lucenia Dunn, Mayor
Gregory Lee, Police Department
Diane White, City Clerk

Fire Protection
Buel Adams, Franklin Fire Department
Jimmy Ellis, Shorter Fire Department
Robert Segrest, Franklin Fire Department
Derrick Swanson, Tuskegee Fire Department
Mike Whitman, Notasulga Fire Department

Medical Services
Keith Bryan, CARE Ambulance
Patricia Clay, Macon County Health Care Authority
Bettye Grant, Tuskegee-Macon County Red Cross
Linda Watson, CAVHCSEC (Veterans Hospital)
Wanda Wilson, Macon County Health Department

Media
Silas Buchanan, WBIL Radio Station
Guy Rhodes, Tuskegee News

Education
Wilbert Anderson, Tuskegee University
Jesse Barnes, Tuskegee University
James Beacher, Macon County Board of Education, Transportation
Benjamin Rackley, Tuskegee Health Education Center
Johnny Simpler, B.T. Washington High School
Willie Thomas, Macon County Board of Education

Utilities
Izell Brown, Tuskegee South Sewage Treatment Plant
Jeff Ezell, BellSouth
John Kamara, Tuskegee North Sewage Treatment Plant
Lewis Maxwell, Star-Mindingall Water Authority
Ben Moore, Macon County Water Authority
John Tate, Tuskegee Water Filtration Plant

Business
Richard Cleghorn, VictoryLand Greyhound Park
Jess Colson, Macon County Board of Realtors
Shepherd Morris, Morris Flying Service
David Mullins, Terra International
Arnold Woodham, Helena Chemical Company

Agriculture / Forestry
James S. Bannon, EV Smith Research Center
Scott Hartley, Taleecon Farmers Cooperative
Bob Montgomery, Alabama Forestry Commission
Mike Schreyer, Farm Service Agency

Organizations
Kenneth Jones, Macon County Ministers' Council
Michael Martin, Tuskegee Post Office
Linda Simpson, Tuskegee Housing Authority
James Upshaw, Macon County Community Action

As a result of Macon County's desire to bring as much participation as possible to the process through a variety of representatives, a total of 71 persons were asked to directly participate in the planning process. LEPC members often served as representatives of more than one segment of the population. Volunteer firefighters were the most notable in this respect because of their representation as both an emergency responder and for their locale, or jurisdiction, within Macon County.

To encourage participation by committee members, dates were set for four planning meetings during March, April and May, 2003. The LEPC and other stakeholders were notified by letter of the hazard mitigation planning project, and were also notified of the dates for the four meetings so that participants were able to plan well in advance. The four planning meetings were held in the Spring 2003 on March 13, March 27, April 17 and May 8, each at 10:30 a.m. at the Tuskegee City Hall. Following each meeting, a letter was sent to all committee members and stakeholders with a meeting summary and any handouts and worksheets that were distributed during the meeting. Committee members were asked, if they were not present at the meeting, to complete the worksheets and return them to the Macon County EMA in advance of the next meeting or to at least bring them with them to the next meeting.

In addition to the meeting notice/summary letters that were mailed, the *Tuskegee News*, a local weekly newspaper, ran a meeting reminder notice at least once prior to each meeting. Notices were sent prior to each meeting, along with a summary of the previous meeting. Meeting handouts from the previous meeting were also included so that the work/comments could be completed and returned prior to the next meeting. Nine articles about the planning meetings ran in the *Tuskegee News* on March 13, March 20, March 27, April 3, April 10, April 17, April 24, May 1, and May 8, 2003.

The purpose of the newspaper articles was two-fold: one, to remind the LEPC committee members of upcoming meetings; and two, through repetition, to build awareness in the general public about the hazard mitigation planning process. This second purpose of the newspaper articles is part of the public participation component of the Macon County natural hazard mitigation planning process. The public participation component of the project included advertising and conducting two public workshops offering the general public an opportunity to review and comment on the natural hazard mitigation process prior to completion of the project.

The first public workshop was held on April 3, 2003 at 6:00 p.m. at the Charles O. Gomillion Community Services Center in Tuskegee. The public was notified of the meeting through two articles in the *Tuskegee News*, on March 27 and April 3, 2003, posting of flyers in prominent locations throughout Macon County, mailing of flyers to over 100 individuals and by

word of mouth by members of the LEPC. The first workshop was held midway through the planning process. As stated in the *Tuskegee News*, the purpose of the workshop was to "…educate residents on the County's hazard mitigation planning process. Information will be presented about Macon County's present risk assessment, including hazard identification, previous hazard occurrence documentation, land use analysis, development trends, vulnerability analysis, and risk assessment." A comment form was used in addition to a general question, answer and comment period following a presentation of information to receive citizen comments and suggestions.

Figure 2:

Citizens participate in a public workshop conducted during the process of preparing the Macon County Natural Hazard Mitigation Plan.

A second public workshop was held on May 15, 2003 at the same location as the first and advertised in the same manner. A press release and public service announcement were sent to the local newspaper and an article about the second public workshop appeared in the *Tuskegee News* on May 15, 2003. A draft of the Macon County Natural Hazard Mitigation Plan was made available upon arrival for review and discussion by citizens with the Macon County EMA and representatives from SCADC. The meeting attendance roster, newspaper coverage and the draft that was presented are on file in the offices of the Macon County EMA.

Follow-up measures of the public participation plan included responding to areas of high interest and areas in which it was determined that participation was very low. In response to the high level of interest by the fire fighting community and a request at the first public workshop, Mr. William Gunn, Director, Macon County EMA, made a presentation to the Macon County Fire Chief Association in April 2003, to review the

Figure 3:

The hazard mitigation planning process is explained to Macon County residents at a public workshop during the planning process.

material that was presented at the first workshop and receive additional comments from this sector of the emergency response community.

Attendance at the LEPC planning meetings and at the public workshops was moderate to low. There was a discernable lack of participation by the elected officials of the governmental jurisdictions, although other representatives of each of the jurisdictions as well as the unincorporated portions of Macon County were present. To address this deficit, the draft of the *Macon County Natural Hazard Mitigation Plan* was presented by Mr. Gunn at public meetings of the Macon County Commission and at council meetings of each of the four municipalities covered under the plan. Prior to the presentations, a sample resolution for consideration of adoption was provided to each elected official in their council packages and a copy of the draft plan was placed in each town hall. At each of these public meetings, elected officials were provided with the opportunity to ask questions and/or comment about the contents of the plan as it was presented. Mr. Gunn explained the federal requirements for participation in the planning process and adoption of the plan pursuant to 44 CFR 201.6(a)(4) in order to remain eligible for future hazard mitigation or emergency relief funding through the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation (PDM) program. No comments or requests for changes were presented to Mr. Gunn at the meetings or at any time afterwards.

Meeting attendance rosters from all meetings, meeting summaries, meeting presentations, LEPC committee worksheets, press releases, public service announcements, newspaper articles and citizen comment forms are on file in the Macon County Emergency Management Office and available for public review.

1.4 Process

The Macon County Natural Hazard Mitigation Plan was developed using a ten-step process outlined by the FEMA and shown in Figure 3. In Step 1, the planning process was initiated by the Macon County EMA with funding provided through a grant from the AEMA Pre-Disaster Mitigation Program with matching funds provided by the Macon County EMA. William Gunn, Director of the Macon County EMA directed the process. The first organizational step was to contract with the South Central Alabama Development Commission for services to outline a participation plan and prepare the Macon County Natural Hazard Mitigation Plan under the direction of Mr. Gunn and with the oversight of a hazard mitigation planning committee. The second organizational task was to establish a hazard mitigation planning committee. Macon County's LEPC now serves as the hazard mitigation planning committee. Originally, the LEPC had a membership of 43 persons, but was increased to 53 members to meet the representation requirements of Section 44 CFR 201.6(b)(2). In addition to

the members of the Macon County LEPC, 18 representatives of state, federal and regional agencies were invited, by letter, to participate in the process to ensure intergovernmental coordination and cooperation and representation of neighboring communities through regional agencies, such as SCADC, Alabama Department of Transportation, Sixth Division, and larger utility companies. These agencies are listed in *Section 1.3 Participation* of this chapter of the plan. The composition of the Macon County LEPC (also see Figure1) includes the following:

- 16 members representing local governments and their populations;
- five members representing four volunteer and one municipal fire departments;
- five members representing medical services -- one ambulance business and four health care providers;
- two members representing the media – a newspaper and a radio station;
- six members representing academia – two from Tuskegee University, three from the Macon County public school system (a Board of Education member, a transportation staff person, and a teacher/principal), and one from a health education center;
- six members representing local utilities including water, sewer and communications;
- five members representing local businesses;
- four members representing agriculture and forestry; and
- four members representing nonprofits and social/service organizations.

Of the 16 members representing local governments, seven represented Macon County, two each represented the Towns of Franklin, Notasulga and Shorter, and three represented the City of Tuskegee. The seven Macon County members represent the Macon County Commission, staff functions and the population of Macon County living in the unincorporated areas. The Chair of the Macon County Commission, who serves on the LEPC, is elected at-large representing the entire county rather than one district. Neighboring counties were provided with a draft of the plan prior to adoption and will be invited to participate in all future updates of the plan.

The use of such a large committee with a wide variety of representative sectors as the hazard mitigation planning committee was the beginning of the Step 2: Involve The Public. The public was made aware of the planning process through a series of nine newspaper articles during March, April and May, 2003. Additionally, each LEPC member was charged with the responsibility of acting as a liaison to their respective communities to inform others about the process. The public was then involved in the planning process through two public workshops held on April 3 and May 15, 2003, a presentation to the Macon County Fire Chief Association, and presentations to each of the governmental jurisdictions at their regular public meetings. Citizens were notified of the public workshops by mailing and posting of

flyers in prominent locations throughout the county and through three newspaper articles.

At the first public workshop, which was led by the Macon County EMA and SCADC, 21 persons were in attendance and items of discussion included the hazard mitigation planning process, a county profile, past hazard occurrence documentation, hazard identification and prioritization, hazard impact assessment and critical facilities, and preliminary hazard mitigation goals. To conclude the meeting, SCADC distributed a form for comments and suggestions while hosting a question and answer period. A total of eight comment forms were returned with respondents generally agreeing with the prioritization of hazards and the preliminary hazard mitigation goals. Participants also provided information on past hazard events. This information was integrated into the next planning meetings.

Figure 4:

Hazard Mitigation 10-Step Planning Process

Step 1: Organize

Step 2: Involve the Public*

Step 3: Coordinate with Agencies and Organizations*

Step 4: Assess the Hazard

Step 5: Assess the Problem

Step 6: Set Goals

Step 7: Review Possible Activities

Step 8: Draft an Action Plan

Step 9: Adopt an Action Plan

Step 10: Implement, Evaluate and Revise**

* Step 2 and Step 3 continue throughout the process.
** Upon evaluation and revision, the process should begin again at Step 2. Evaluation and revision should occur every year, with major updates of the plan occurring every five years.

At the second public workshop, which was also led by the Macon County EMA and SCADC, there were a total of four persons in attendance: one person from Macon County EMA, two persons from SCADC and one citizen. The second workshop was advertised in the same manner as the first. The purpose of the workshop was to review a draft of the plan prior to submission to AEMA and FEMA for review and comments. Due to the low attendance at the workshop, it was decided by the Macon County EMA and SCADC that while the plan would be submitted to AEMA in time to meet a June 21, 2003 deadline, concurrently, Mr. Gunn would present the draft to all of the governmental jurisdictions at public meetings, providing them with an opportunity to comment on the plan. All elected officials were notified in their council packages of the upcoming presentation and a copy of the draft was placed in each town hall and the Macon County Courthouse for review prior to the meetings. No comments or suggestions were made by the local governments.

Step 3 of the process, Coordinate with Agencies and Organizations, was accomplished by the membership of the Macon County LEPC and the 18

additional agencies and organizations that were invited to participate in a series of four meetings during the planning process. All committee members were notified prior to each meeting by a letter reminding them of the upcoming meeting. Each letter was accompanied by a review of the previous meeting along with any handouts that were distributed.

Steps 4 through 8 of the planning process were accomplished during the series of four planning meetings of the Macon County LEPC. At the first planning meeting, held on March 13, 2003, Step 4 – Assessing the Hazard and Step 5 – Assessing the Problem were addressed. The meeting was attended by 18 committee members representing Macon County, City of Tuskegee, medical services, fire protection, utilities, businesses, agriculture and forestry, and SCADC. The hazard mitigation planning process was introduced by Mr. Gunn under Item VI of the committee's regular agenda, stating that the plan would cover Macon County and the municipalities of Franklin, Notasulga, Shorter and Tuskegee. Mr. Gunn also explained that new Federal Emergency Management Agency (FEMA) requirements state that for an area to remain eligible for disaster recovery funds in case of a declared disaster after November 1, 2004, the locality must have an adopted hazard mitigation plan in place.

A video, produced by FEMA, entitled *Mitigation Workshops* was shown to committee members. It was explained that while the video referred to only to floods, the Macon County Hazard Mitigation Plan would include all types of natural hazards, but would still use the same process. After the planning process was explained and meeting and workshop dates were reviewed, a list of 15 natural hazards was distributed and committee members were asked to review each hazard and then mark the hazard as it pertains to Macon County as not applicable or as a Priority 1, 2, or 3 hazard (with 1 being highest priority and 3 being lowest). In a comparison and discussion of results, it was determined that there are six natural hazards that can be considered a high priority in Macon County. These are (in ranking order) tornadoes, wildfires, extreme heat, drought, and flood and thunderstorms. The natural hazard that presents the least threat to Macon County is volcanoes. Those hazards that were mostly ranked as priority two include hail, hurricanes, ice storms, and expansive soils/sinkholes; and as priority three include landslides, dam failure, earthquakes and coastal storms.

Following the identification and prioritization of the natural hazards most threatening to Macon County, a blank form entitled *Problem Assessment – Hazard Impacts* was distributed. Each committee member was asked to take six forms and fill one out for each of the top six natural hazards. Committee members were asked to list the impact of the hazard on each of the subject areas listed (life safety, public health, mental health, buildings, roads and transportation, utilities, infrastructure, critical facilities, business centers, major employers, landmarks, economy, repetitive losses, natural

areas and development trends. Committee members were asked to bring the hazard impact form with them at the next meeting for comparison and discussion. Committee members were then provided with an opportunity to review maps of identified hazard patterns prior to the conclusion of the meeting.

The second planning meeting was held on March 27, 2003 and attended by 23 committee members representing Macon County, the Town of Notasulga, the Town of Shorter, the City of Tuskegee, utilities, fire protection, medical services, businesses, forestry and agriculture, nonprofit organizations, and SCADC. The ten-step hazard mitigation process was reviewed and it was explained that this meeting would cover Steps 4 and 5, as in the first meeting, and also Step 6 – Setting Goals. The inventory maps of natural hazard patterns and physical and demographic features of Macon County was reviewed, along with a history of past natural hazard occurrences. A hazard vulnerability analysis of Macon County, compiled in June 2001, was distributed and discussed and compared to the history of past hazard occurrences. The hazards that were identified at the first meeting were then reviewed, with committee members stating that no changes needed to be made. The LEPC then had a discussion of the potential impacts of the six "priority one" hazards, with each impact being listed on an overhead. Using the hazard impact worksheets, the LEPC was able to discuss and identify critical facilities within the county and municipalities. To conclude the meeting, a handout defining a goal, objective and mitigation action was distributed. Committee members were asked to develop three general goals as a result of the problem assessment discussion and return them to the Macon County EMA by April 1, 2003 so that preliminary goals could be presented and discussed with the general public at the first public workshop on April 3, 2003. Committee members received copies of the public workshop flyers and were asked to distribute them in their communities and work places.

The third planning meeting of the LEPC was held on April 17, 2003 and attended by 19 committee members representing Macon County, the Town of Notasulga, the City of Tuskegee, medical services, businesses, non-profit and service organizations, utilities, agriculture and forestry, education, and SCADC. The purpose of this meeting was to review the results of the first public workshop and to address Steps 6 and 7 – Setting Goals and Reviewing Possible Actions. LEPC members were presented with a list of historical and current plans, ordinances and studies that were prepared for Macon County and its municipalities. These plans were researched for ideas and relevance toward hazard mitigation and disaster preparedness. A short list of SCADC's findings was presented, which stated that out of the 16 plans reviewed, there was very little information directly related to hazard mitigation. Existing information that was gathered from the plan review included police and fire protection services and needs; protection and

preservation of environmentally-sensitive areas; road and bridge improvement needs; limits to development in flood-prone areas; the number of unsafe buildings has increased the potential for fire hazards; and, there is a lack of adequate medical facilities. The plan review also resulted in a summary of available tools that can be used in hazard mitigation activities. These tools include flood damage prevention ordinances, subdivision regulations, zoning ordinances, capital improvement programs, and proposed dangerous buildings ordinance. Committee members were asked to provide information regarding any other plans or reports that may be relevant to the Macon County Natural Hazard Mitigation Plan. The information gathered from the plan review was incorporated into the mitigation strategy of this plan as either a resource for implementation or as a need for a tool for implementation.

During the remainder of the meeting, committee members discussed six preliminary goals that had been formulated by SCADC from existing plans and studies and from discussions at previous planning meetings and the first public workshop. The committee discussion resulted in the incorporation of one goal into two others and the development of at least three objectives for each of the goals.

The fourth and final planning meeting was held on May 8, 2003 and attended by 12 committee members representing Macon County, the City of Tuskegee, the Town of Shorter, medical services, agriculture and forestry, education, utilities, businesses, and SCADC. The LEPC addressed Steps 7 and 8 of the process, reviewing possible actions and drafting an action plan and Step 10 – Implementation, Monitoring and Evaluation. SCADC presented three final goals that had been consolidated from the six formulated by the LEPC at the previous meeting and asked the committee to affirm the goals, which the committee did. The more detailed objectives for each of the goals were presented and the committee was asked if it was in agreement with each of the objectives. The LEPC agreed with the objectives as presented. A discussion of action steps associated with each objective was then begun and it was explained that the proposed actions steps were the responsibility of a variety of agencies and organizations for implementation and that the costs were projected on a five-year basis, since the plan is to be updated every five years. The LEPC reviewed each of the action steps, made adjustments, consolidations and eliminations as necessary. The LEPC also was instrumental in finalizing cost projections and prioritization of the action steps.

The work of the LEPC was used along with the research prepared by the SCADC to prepare a draft of the Macon County Natural Hazard Mitigation Plan. The draft was presented at the second public workshop and to each of the local governments at their own public commission or council meeting and submitted to AEMA (and subsequently to FEMA) for review and

comments. Following the AEMA and FEMA review, revisions were made to the draft and it was then presented to each of the local governments for review and adoption. During the last presentations to the local governments, emphasis was placed on the vulnerability and responsibility of each of the local governments in future hazard mitigation activities. These presentations and adoption by the local governments completed Step 9 of the process – Adopting an Action Plan. Step 10 – Implement, Evaluate and Revise is addressed in the final chapter of this plan.

The results of the ten-step planning process with the LEPC and public workshops and governmental presentations is the basis remained of this plan. Each step is addressed in more detail in subsequent chapters. Implementation of the *Macon County Natural Hazard Mitigation Plan,* however, will be shared by all local governments in the county, along with a number of emergency agencies and responders. The on-going review and evaluation will enable the Macon County EMA to update the mitigation plan in response to changing conditions and changes in the economic climate that may have an impact on the provision of facilities and services.

Copies of all meeting summaries, attendance rosters, presentation materials, handouts, newspaper articles, flyers, and comment forms are on file in the office of the Macon County Emergency Management Agency and are available for public review. These materials will remain on file to guide the continued evaluation and monitoring process necessary to successfully implement this plan.

CHAPTER 2:
MACON COUNTY PROFILE

Macon County, located in east central Alabama, is a primarily rural county with four incorporated municipalities: Franklin, Notasulga, Tuskegee and Shorter. Tuskegee, located in the north central part of the county, is the county seat. Macon County is located within 50 miles of Montgomery, Auburn, Opelika and Columbus, Georgia. Major Alabama cities within a 200-mile radius include Birmingham, Huntsville, Mobile, and Tuscaloosa. Other cities within a 200-mile radius include Atlanta and Macon, Georgia; Chattanooga, Tennessee; Meridian, Mississippi; and Fort Walton, Panama City, Pensacola and Tallahassee, Florida. Macon County encompasses 614 square miles of land and is accessed by Interstate 85 across the northern portion of the county. Macon County also has regional access by U.S. Highway 29, U.S. Highway 80 and Alabama Highways 14, 51, 81 and 199.

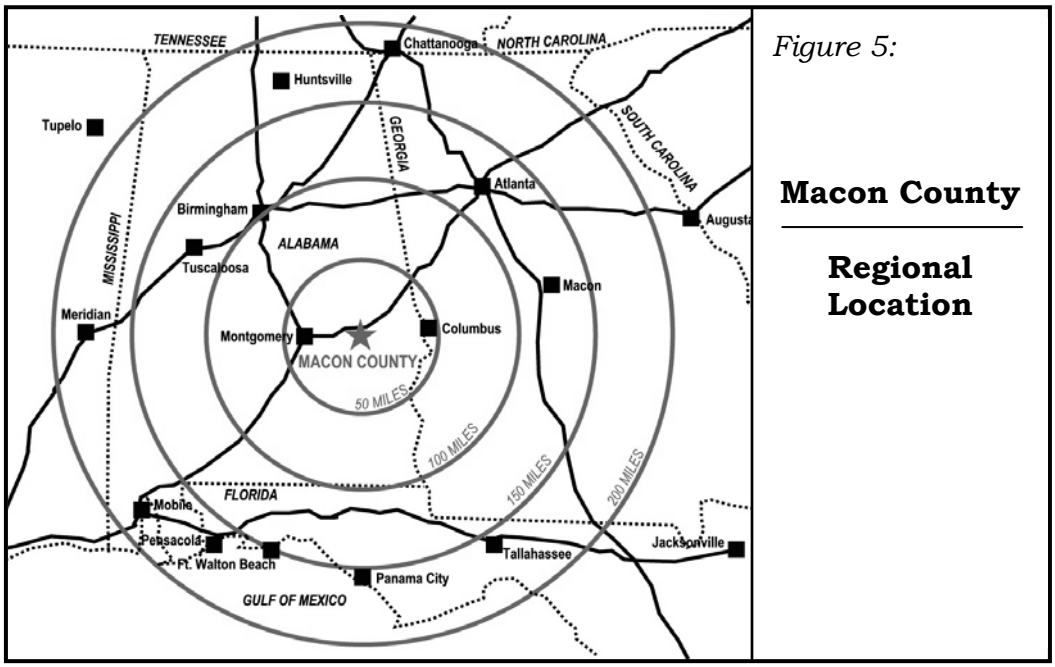


Figure 5:

Macon County

Regional Location

2.1 Demographic Characteristics

Macon County is fairly sparsely populated with a population density of 39.5 persons per square mile, as compared to the State of Alabama with 87.6 persons per square mile. Almost half of the county's population lives in the City of Tuskegee, which has a density of 765.7 persons per square mile.

Macon County has a population of 24,105 persons, according to the 2000 Census, of which nearly half, at 45 percent, live in the unincorporated areas of the county. Of the remaining 55 percent, 49 percent live in the City of Tuskegee; 4 percent live in the Town of Notasulga; and, 1 percent each live in the Towns of Franklin and Shorter. The majority of the population of Macon County is female, at 54 percent, and 46 percent are male. The female ratio of Macon County is slightly higher than that of the State, which is 51.7 percent.

Figure 6:

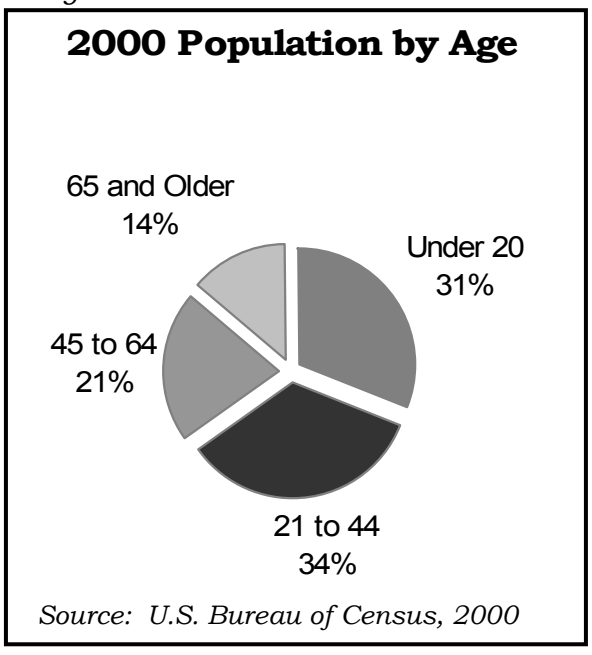
Macon County Population, 2000

Area	Population	% of Total Population
Macon County	24,105	100%
Franklin	149	1%
Notasulga	916	4%
Shorter	355	1%
Tuskegee	11,846	49%
Unincorporated Area	10,839	45%

Source: U.S. Bureau of Census, 2000

The median age in Macon County is 32.0, which is younger than the median age of the State, at 35.8. Tuskegee University accounts for a large part of the younger population of the county. The median age of Tuskegee is 26.4, while the median age in the other municipalities is considerably older, at 32.9 in Shorter, 40.0 in Notasulga, and 47.1 in Franklin. The majority of the population, at 31 percent, is under 20 years of age, while the elderly population, age 65 and older, comprises only 14 percent. The remaining 55 percent of the population is between the ages of 21 to 44 (at 34 percent) or the ages of 45 to 64 (at 21 percent).

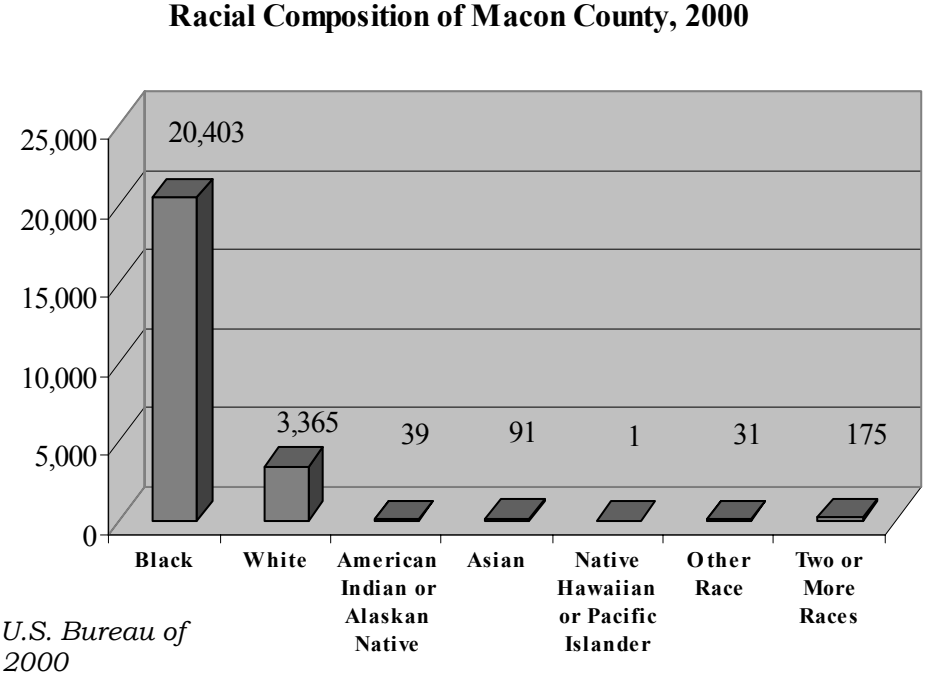
Figure 7:



Source: U.S. Bureau of Census, 2000

Macon County is a majority minority area, with African-Americans comprising 84.6 percent of the population, according to the 2000 Census. Of the total county population, 14.0 percent is white. The only municipality in the county that does not have a majority minority population is the Town of Notasulga, in which 66.3 percent of the population is white and 32.4 percent is African-American. The racial composition of other races in Macon County is nearly negligible, with all other races combined only comprising 1.4 percent of the total population.

Figure 8:



Source: U.S. Bureau of Census, 2000

There are 10,627 housing units in Macon County, the majority of which, at 48 percent, are located in Tuskegee. As shown in Figure 9, the central part of the county in around Tuskegee is the most densely populated part of the county with the remainder having 20 units or less per square mile. Of the total housing units in the county, 84.2 percent are occupied and 15.8 percent are vacant, of which 1.3 percent are for seasonal, recreational or occasional use. Of the total occupied housing, 67.3 are owner-occupied and 32.7 percent are renter-occupied. The majority of the housing units, at 63 percent, are single unit unattached structures. Only 9 percent of the housing structures have four or more units. The portion of the housing structures that are mobile homes is 17 percent. A large portion of the county's housing stock, at 39.6 percent, is more than 30 years old. Between 1995 and March 2000, 1,242 new housing units were constructed, comprising 12 percent of the existing housing stock. It is interesting to note that 25.1 percent of the housing stock is between 24 to 33 years old, having been built between 1970 and 1979.

Figure 9:

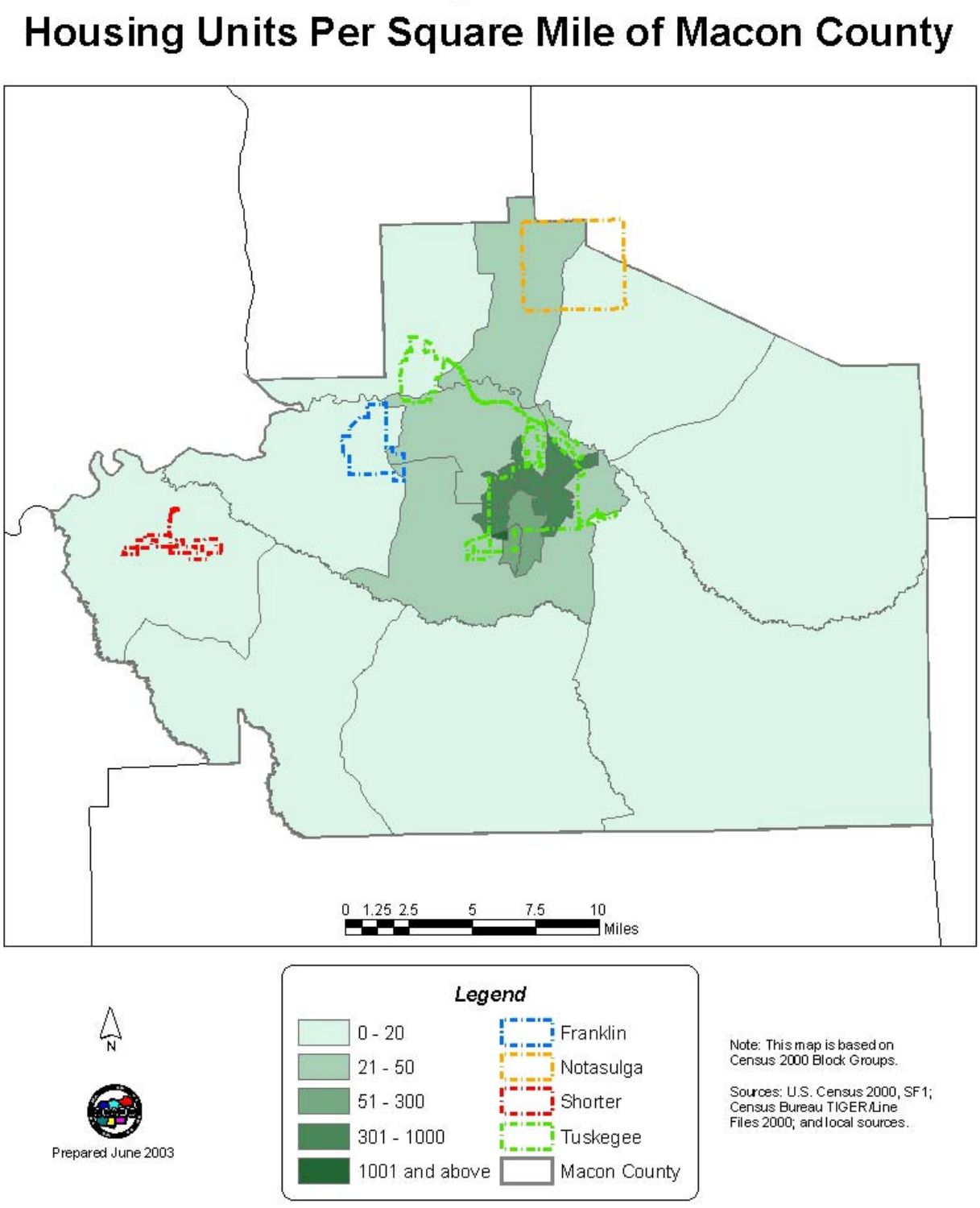
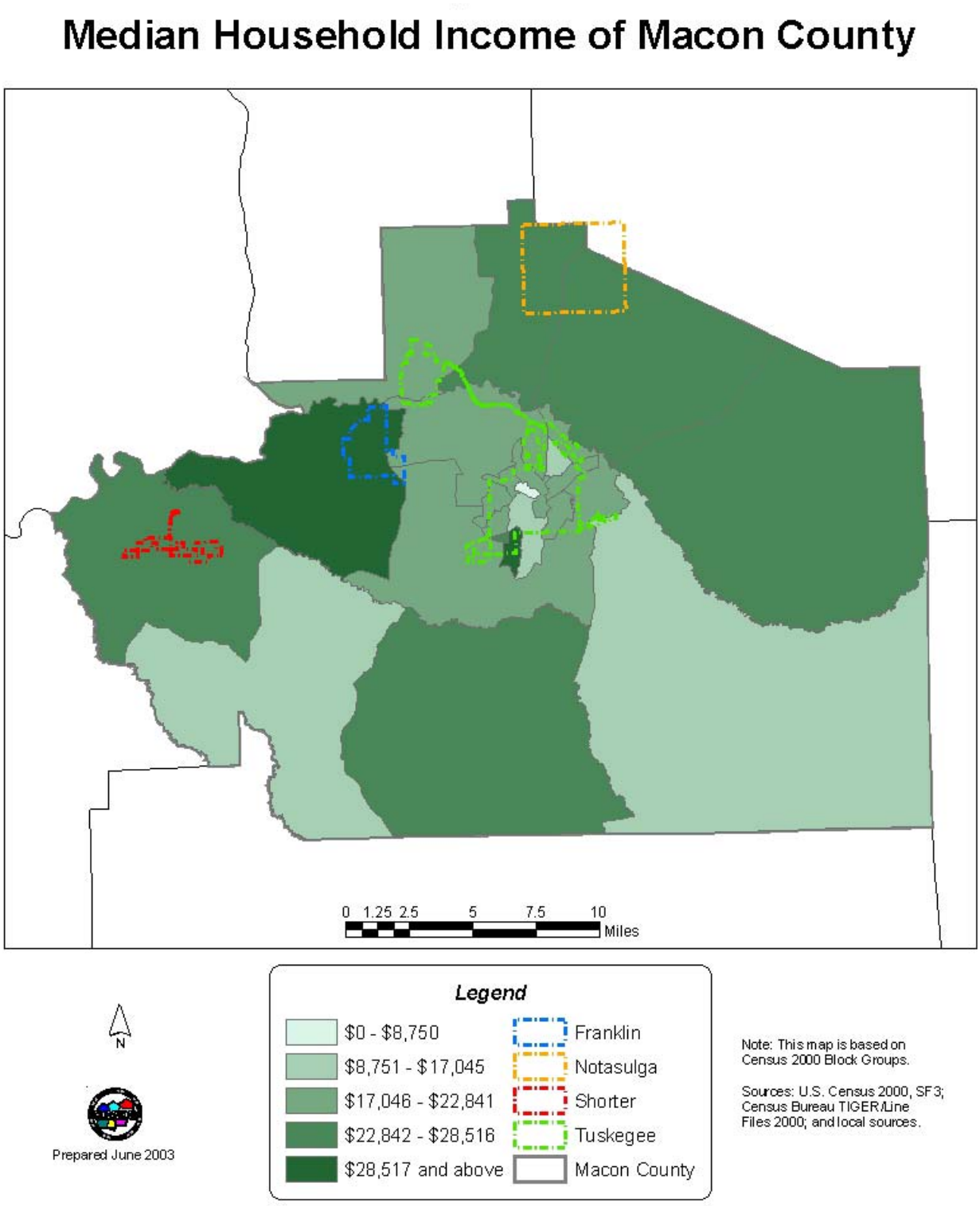

Housing Units Per Square Mile of Macon County
0 1.25 2.5 5 7.5 10
Miles
N
Prepared June 2003
Legend
0 - 20
21 - 50
51 - 300
301 - 1000
1001 and above
Franklin
Notasulga
Shorter
Tuskegee
Macon County
Note: This map is based on Census 2000 Block Groups.
Sources: U.S. Census 2000, SF1; Census Bureau TIGER/Line Files 2000; and local sources.

Figure 10:


Median Household Income of Macon County
0 1.25 2.5 5 7.5 10
Miles
N
Prepared June 2003
Legend
$0 - $8,750
$8,751 - $17,045
$17,046 - $22,841
$22,842 - $28,516
$28,517 and above
Franklin
Notasulga
Shorter
Tuskegee
Macon County
Note: This map is based on Census 2000 Block Groups.
Sources: U.S. Census 2000, SF3; Census Bureau TIGER/Line Files 2000; and local sources.

Macon County has a per capita income of $13,714 and a median household income of $21,180, according to the 2000 Census. This is considerably less than that of the State, which has a 2000 per capital income of $18,189 and a 2000 median household income of $34,135. Comparatively, the Town of Franklin has a per capita income of $34,571 and a median household income of $35,000; the Town of Notasulga has a per capita income of $17,115 and a median household income of $31,307; the Town of Shorter has a per capita income of $10,630 and a median household income of $18,929; and, the City of Tuskegee has a per capita income of $12,340 and a median household income of $18,889. The portions of the county with the lowest median household income at less than $17,045, as shown in Figure 10, are in the southwest and southeast.

2.2 Physical Characteristics

It makes sense that the population base is located in the northern part of the county when viewed from a geographical standpoint. As shown in Figure 11, most the regional access is located in the northern part of the county, while the southern part is comprised primarily of county roads. General land use patterns (Figure 12) also follow the transportation system, with the majority of structural development being located in the northern part of the county and the majority of the southern part of the county being in agricultural and forestry land uses.

Figure 11:

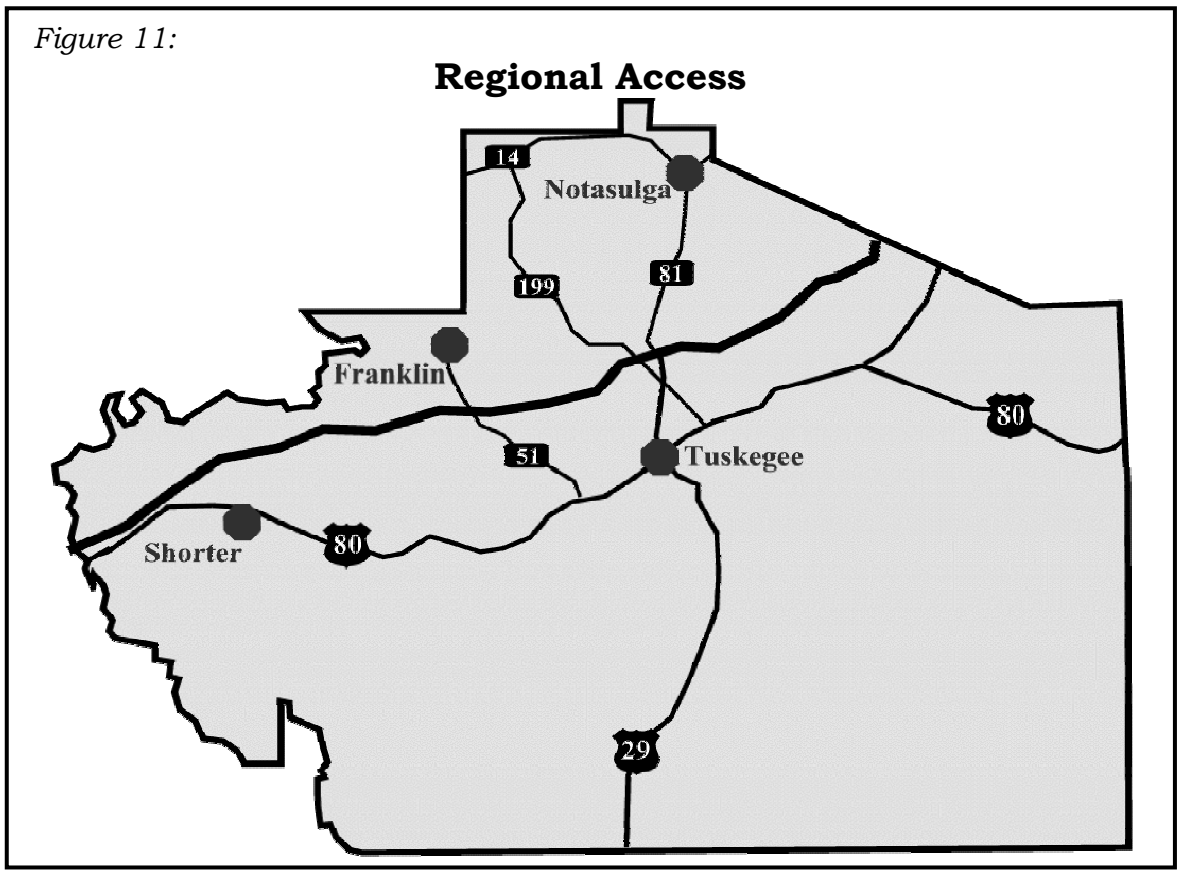
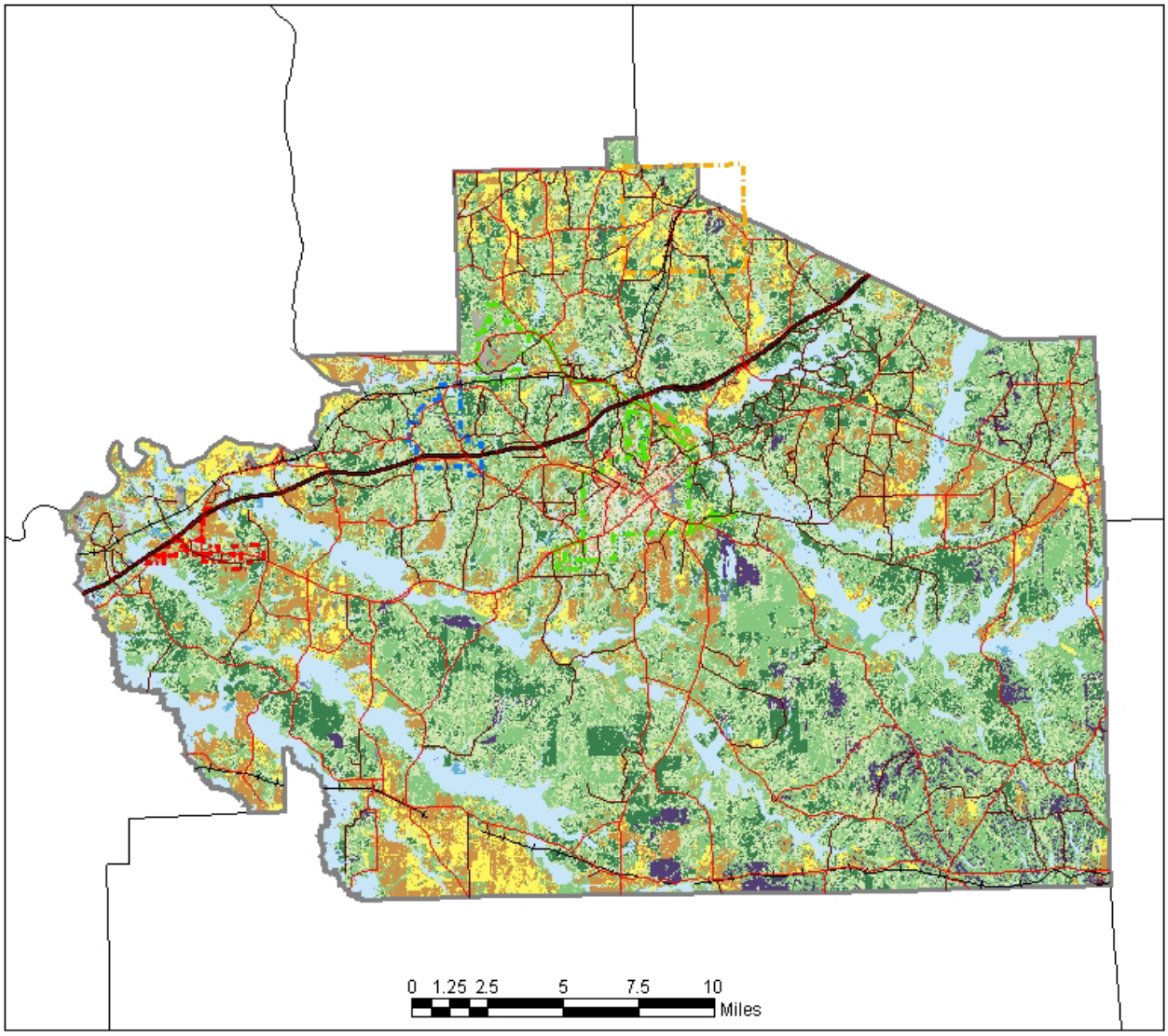


Figure 12:

Land Use & Land Cover of Macon County



N

Prepared June 2003

Legend

Land Cover
VALUE
Open Water
Low Intensity Residential
High Intensity Residential
Commercial Industrial Transportation
Bare Rock/Sand/Clay
Quarries/Strip Mines/Gravel Pits
Transitional
Deciduous Forest
Evergreen Forest
Mixed Forest
Pasture/Hay
Row Crops
Small Grains
Woody Wetlands
Emergent Herbaceous Wetlands
Primary road with limited access
Primary road
Secondary and connecting road
Railroad
Franklin
Natchez
Shoals
Tuskegee
Macon County

Sources: USGS, Alabama Land Cover Data Set, 1999; Census Bureau TIGER/Line Files 2000; and local sources.

Residential land uses throughout Macon County tend to be low density single family housing, with a small percentage of medium and high density housing found in the Tuskegee area. As stated earlier, 17 percent of the housing in the county is mobile homes, most of which (at 80 percent) are found in the unincorporated areas on single ownership lots or tracts of land. The land use / land cover map does not show any high intensity residential uses outside of the City of Tuskegee.

Agricultural uses in Macon County are primarily timberland. Of the total 392,960 acres in Macon County, 81 percent is in forestland, much of which is in timber production. Moreover, Tuskegee National Forest is located in the northeast portion of the county. Forested land is located throughout the county, with pasture and row crop agricultural uses interspersed in between. The most concentrated areas in row crop and pasture land uses are found along the northern and western perimeters of the county. This would correlate with the lower elevations along the major streams in the county. The elevation of Macon County ranges between 39 and 247 feet above sea level with the low lying areas following stream beds and the elevation generally sloping from high points in the southeast to low points in the northwest, as shown in Figure 13.

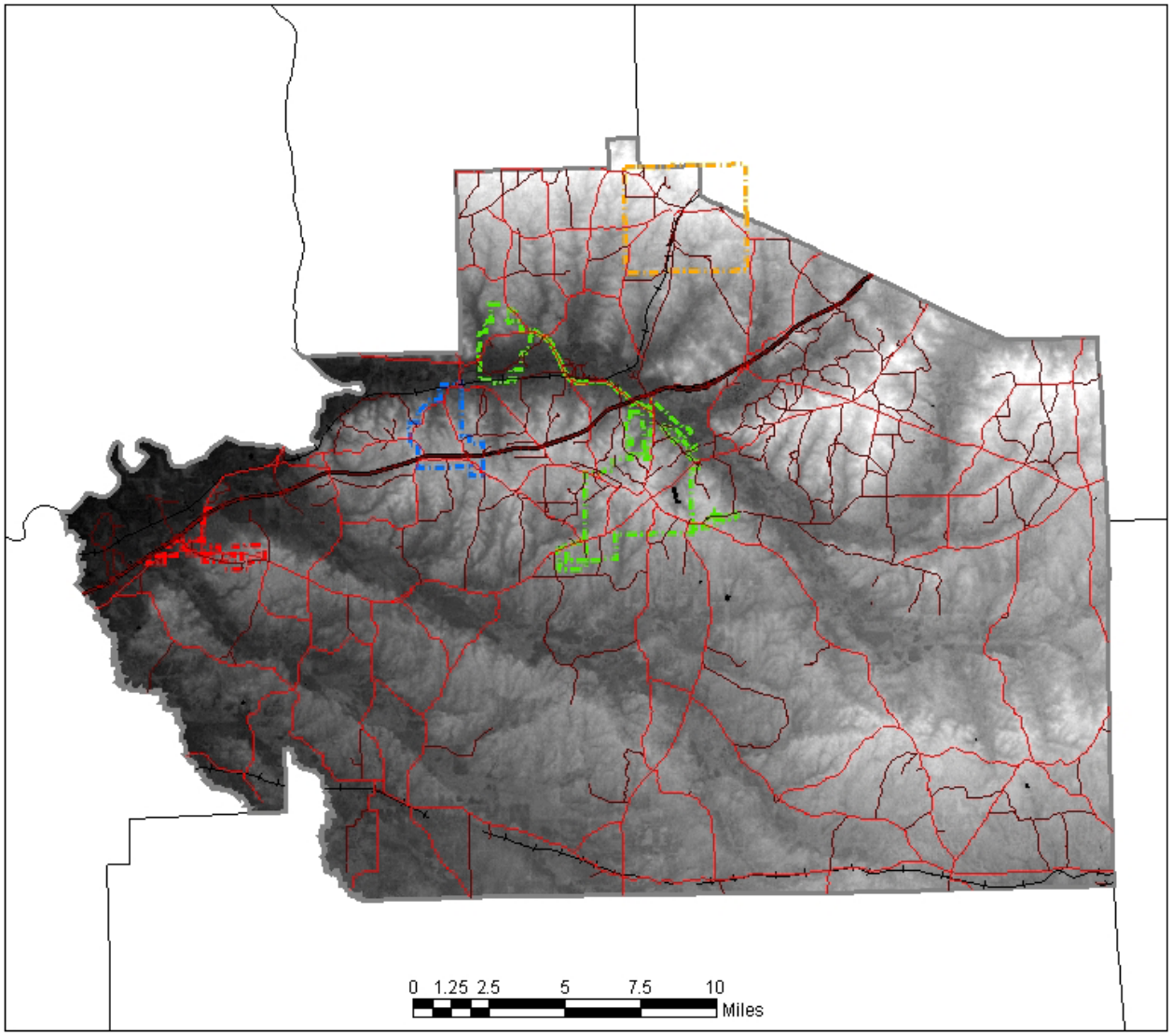
There are four major streams in Macon County, along with the Tallapoosa River which forms the western boundary of the county. Flowing west across the northern part of the county into the Tallapoosa River is Uphapee Creek, which is fed by Chewacla Creek and Opintlocco Creek along with several smaller tributaries. Flowing northwest into the Tallapoosa River is Calebee Creek in the central part of the county and Cubhatchee Creek in the southwest portion of the county. Line Creek forms the southwestern boundary of Macon County and also flows northwest into the Tallapoosa River. Floodplains are found primarily along the Uphapee, Chewacla, Opintlocco, Calebee and Cubahatchee creek beds. The existing floodplains are linear in nature and generally are not expansive in width, with the widest floodplains being approximately one mile wide. There are a significant number of tributaries feeding the primary creeks in the county; however, floodplains along the tributaries are minimal in size.

There are six major soil associations within the boundaries of Macon County, which are the Izagora-Geiger-Una (AL112), Luvern-Marvyn-Cowarts (AL128), Congaree-McQueen-Mantachie (AL141), Oktibbeha-Luverne-Sumter (AL168), Troup-Dothan-Conecuh (AL169) and Luverne-Cowarts-Troup (AL172).

Soils in the Izagora-Geiger-Una association are deep, poorly drained to moderately well drained soils found in flood plains, stream banks and terraces in the Coastal Plain. Slopes range from 0 to 8 percent. These soils

Figure 13:

Digital Elevation Model of Macon County



N

Prepared June 2003

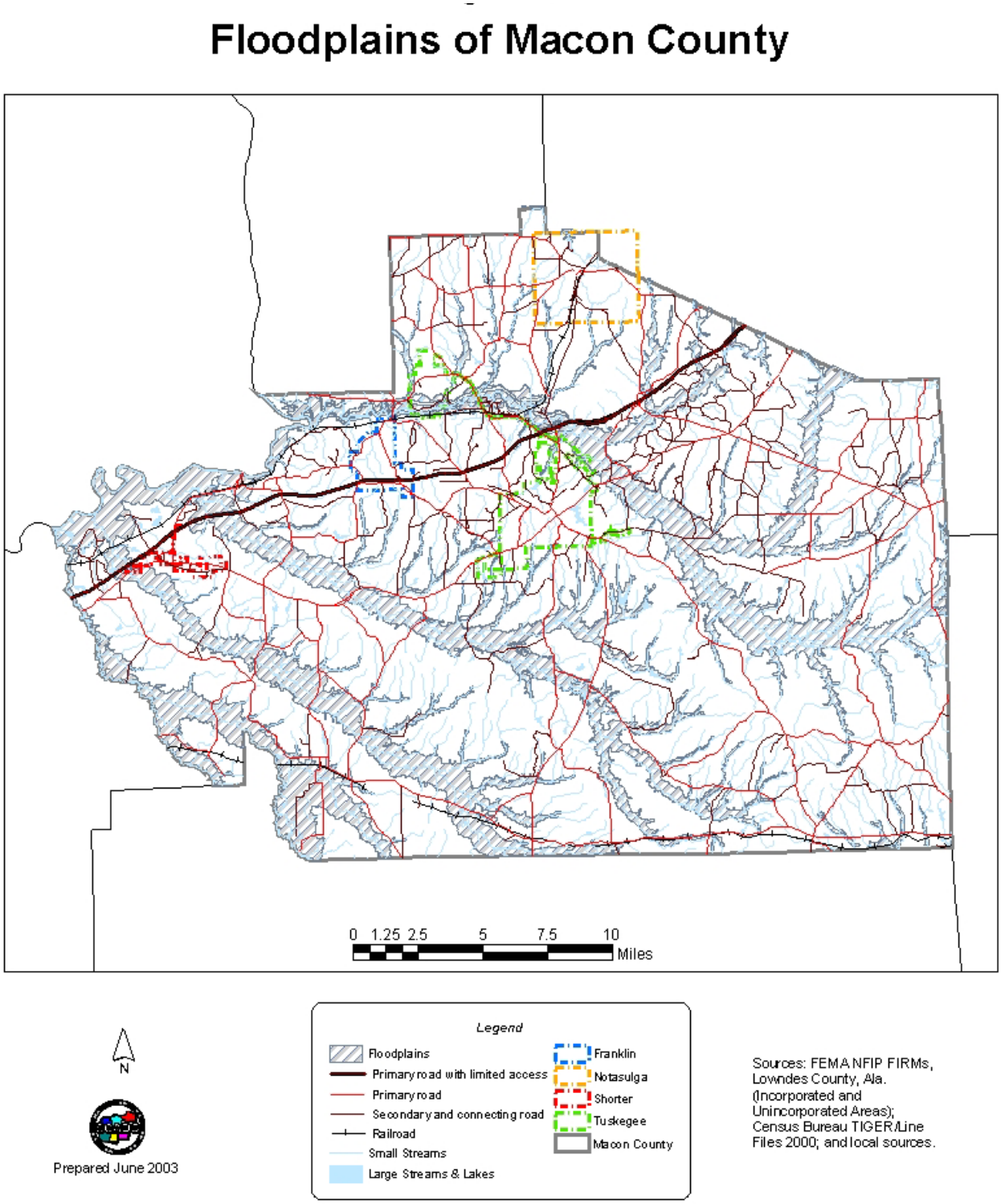
Legend

- Primary road with limited access
- Primary road
- Secondary and connecting road
- Railroad
- Franklin
- Notasulga
- Shorter
- Tuskegee
- Macon County

Elevation Model:
Range
Low = 39 ft
High = 247 ft
Mean = 116 ft

Sources: NASA, NIMA, German Aerospace Center, & Italian Space Agency, SRTM Elevation Dataset, 2002; Census Bureau TIGER/Line Files 2000; and local sources.

Figure 14:


Floodplains of Macon County
0 1.25 2.5 5 7.5 10
Miles
N
Prepared June 2003
Legend
Floodplains
Primary road with limited access
Primary road
Secondary and connecting road
Railroad
Small Streams
Large Streams & Lakes
Franklin
Notasulga
Shorter
Tuskegee
Macon County
Sources: FEMA NFIP FIRMs, Lowndes County, Ala. (Incorporated and Unincorporated Areas); Census Bureau TIGER/Line Files 2000; and local sources.

are subject to occasional or frequent flooding in the late winter and early spring due to poor to moderate permeability, slow to medium runoff and a high water table in the Geiger series.

The Luverne-Marvyn-Cowarts Association consists of deep to very deep, well-drained, moderately slowly to moderately permeable soils formed in the stratified marine or loamy marine sediments of the Southern Coastal Plain. These soils are on gently to steeply sloping on uplands, side slopes and ridge tops of uplands, with slopes ranging from 0 to 15 percent in the Luverne and Marvyn series and 1 to 25 percent in the Cowarts series.

Soils in the Congaree-McQueen-Mantachie Association are deep to very deep, somewhat poorly to moderately well drained, and formed in fluvial and alluvial sediments. Runoff of these soils is slow to moderate with moderate permeability. Slopes are minimal, usually between 0 to 5 percent, but having a range from 0 to 15 percent in the McQueen series. Soils in this association are found on stream terraces and in flood plains that flood late in winter and early spring.

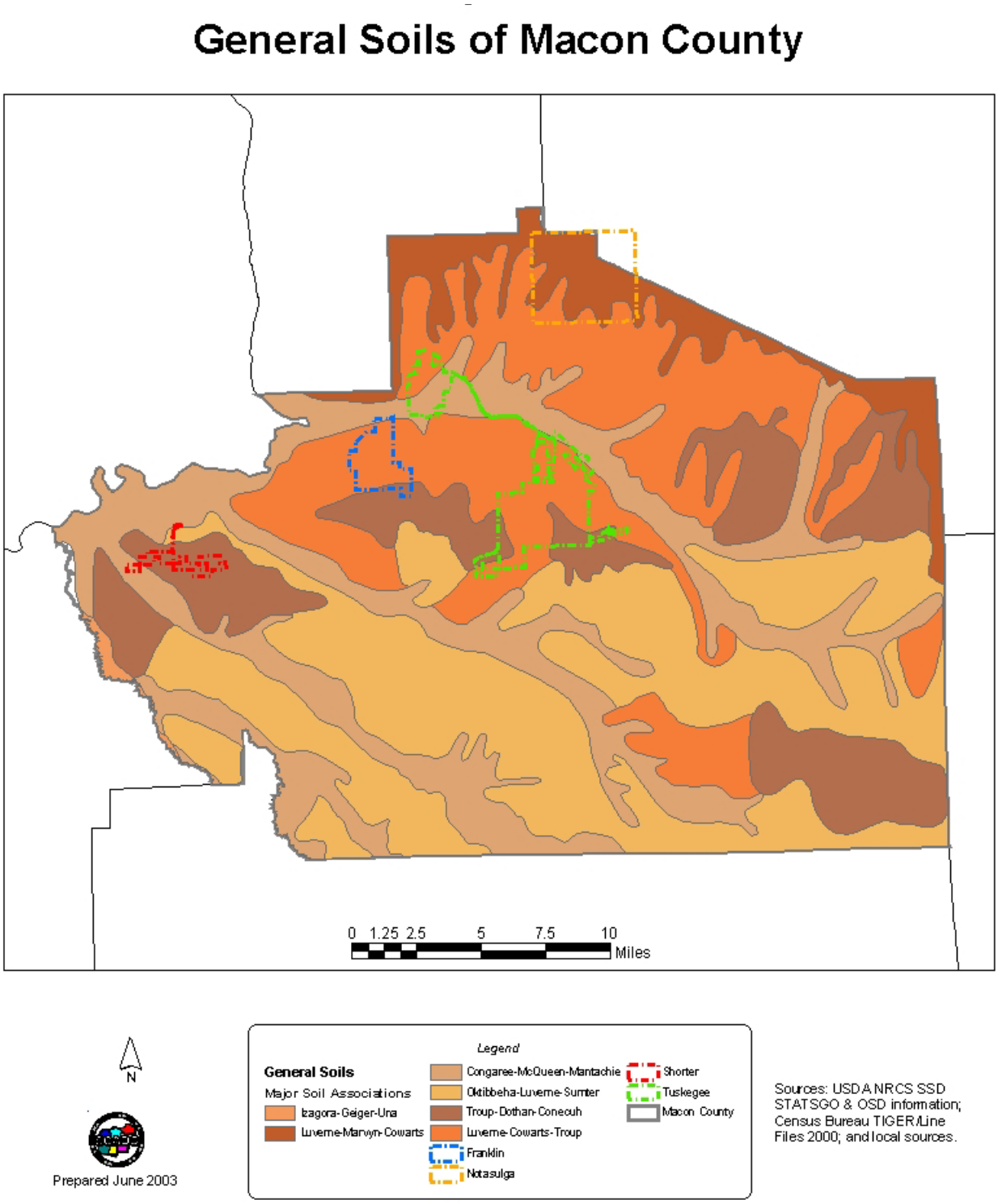
The Oktibbeha-Luverne-Sumter Association consists of very deep to moderately deep soils that are moderately to well drained. They are found in the Southern Coastal Plain and Blackland Prairies on steep dissected uplands, convex ridge tops, and side slopes. Slopes are steep ranging from 1 to 45 percent. Permeability is very slow to moderately slow and runoff is medium to rapid.

The Troup-Dothan-Conecuh Association consists of soils that are deep to very deep, moderately well drained to excessively well drained, and very slowly to moderately permeable. These soils are on broad, nearly level to strongly sloping uplands of the Coastal Plain with slopes ranging from 0 to 12 percent in the Dothan series and 0 to 40 percent in the Troup and Conecuh series.

Soils in the Luverne-Cowarts-Troup Association are deep to very deep, moderately well drained to excessively well drained, with moderately slow permeability in the Luverne and Cowarts series and moderate to rapid permeability in the Troup series. These soils are formed in the stratified and loamy marine sediments of the Coastal Plain. They are found on gently sloping to steep dissected uplands and ridge tops and side slopes of uplands. Slopes range from 1 to 25 percent in the Cowarts series and 0 to 45 percent in the Luverne and Troup series. Runoff in the Luverne and Cowarts series is medium to rapid and slow in the Troup series.

Generally, the soils of Macon County are poorly suited to urban uses due to steep slopes, low strength, restricted permeability and wetness and flooding conditions. These soils are, however, generally well-suited to woodlands

Figure 15:


General Soils of Macon County
0 1.25 2.5 5 7.5 10
Miles
N
Prepared June 2003
Legend
General Soils
Major Soil Associations
Itagora-Geiger-Una
Luverne-Marvyn-Cowarts
Congaree-McQueen-Mantachie
Oktibbeha-Luverne-Sumter
Troup-Dothan-Conecuh
Luverne-Cowarts-Troup
Franklin
Notasulga
Shorter
Tuskegee
Macon County
Sources: USDA NRCS SSD STATSGO & OSD information; Census Bureau TIGER/Line Files 2000; and local sources.

with some restrictions for use of equipment due to erosion hazards and wetness and flooding conditions. A small portion of the soils are suited to cultivated crops, pasture and hay, but even so have flooding and wetness restrictions.

2.3 Summary of Characteristics

The inventory and analysis of existing conditions is the first step in assessment of an area's vulnerability to natural hazards. Through the analysis of existing demographic conditions, it is possible to locate concentrations of population, as well as portions of the population that may be more at risk to natural hazards than other portion because of restricted mobility due to any number of reasons, such as advanced age or economic limitations. Analysis of the existing physical conditions provides knowledge of those areas that are highly susceptible to flooding due to the presence of streams and creeks, flood plains, and hydric soils. The existing land uses and transportation systems are also important in hazard mitigation planning because they show where there could be significant structural and infrastructural damage and what could impede emergency responders.

A summary of Macon County characteristics begins with the existing physical patterns of elevation, soils and floodplains. All of these have a linear east-west pattern generally lying from southeast to northwest. Lower elevations are found in the northwest portion of the county along the Tallapoosa River with higher elevations in the western part of the county. Narrow, linear flood plains follow the major streams that flow from the west and southwest to the northeast to the Tallapoosa River. Although there are six soil associations present in Macon County, only four of the associations are present to any significant degree. The northern half of the county is characterized by soils in Luverne-Cowarts-Troup Association and the Troup-Dothan-Conecuh Association that are more suitable for urban uses. These soils are generally well-drained, have good permeability and runoff can range from slow to rapid. Soils in the southern half of the county are primarily in the Oktibbeha-Luverne-Sumter Association and are better suited for woodland use and some crop and pasture use than urban uses. While these soils are well-drained, they have steep slopes, slow permeability and medium to rapid runoff, leading to erosion problems. Soils in the flood plains found in both the northern and southern parts of the county are in the Congaree-McQueen-Mantachie Association, which are generally flat, with slow to moderate permeability and have a tendency to flood.

The summary of physical conditions explains past development and transportation trends with the great majority of development occurring in the northern portion of the county that is less expensive and more conducive to development. The land use / land cover map shows that Macon County is mostly wooded with some pasture and crop uses in the

southeastern and northern parts of the county and urban uses concentrated around the county's main transportation artery, Interstate 85. Demographic characteristics show that housing density is also highest in the proximity of Interstate 85 and the City of Tuskegee. Those persons who may have mobility limitations due to age or income are located in the southeastern, southwestern and north central portions of the county.

Without consideration of past natural events and patterns, that portion of the Macon County population that is most vulnerable to disaster events are located in the southwest and southeast corners based on poor physical conditions (soils and floodplains) coupled with a low median household income and limited access to major transportation routes as those portions of the county are only accessible by county roads. These parts of the county would be most difficult for emergency responders to reach and due to sparse population density would have the least amount of disaster resources, such as storm shelters, available to them in a hazard event.

CHAPTER 3:
HAZARD IDENTIFICATION AND VULNERABILITY

The risk assessment includes the identification and description of natural hazards that can affect Macon County and its jurisdictions, a profile of the natural hazards that were identified, and an assessment of vulnerability. To better understand the risk assessment process, the following definitions, as reported in the *State of Alabama Hazard Risk and Vulnerability Analysis,* prepared by the AEMA, are provided.

> *Risk* - the probability that damage to life and property will occur due to impacts from a particular natural hazard. (Can include magnitude, duration, frequency and area affected.)
> *Magnitude* - how big or strong the event may be
> *Duration* - how long the event will last
> *Frequency* - how often the event may occur
> *Area Affected* - where and how much area may be impacted by an event
> *Vulnerability* - the degree of exposure to a hazard or how susceptible an area is to a hazard and the losses likely to result from a disaster.

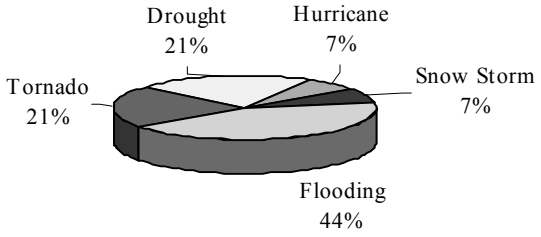
3.1 Hazard Identification

Natural hazards that have the potential to impact Macon County were identified using a variety of resources. First, an overall list of natural hazards was obtained from Federal Emergency Management Agency Publication 386-2 which is a state and local mitigation planning how-to guide entitled: *Understanding Your Risks – Identifying Hazards and Estimating Losses*. Using the general list of natural hazards, research was conducted into past disaster occurrences in Macon County. This information was utilized in conjunction with the inventory and summary of physical characteristics of the county (see Chapter 2) to determine those

hazards most likely to impact Macon County and where. A review of historical and existing plans and regulations in Macon County that identify the potential for natural hazards was also conducted.

A review of past disaster declarations (available through the AEMA) in Macon County revealed that the most frequent natural disaster between 1975 and 2003 has been flooding, at 44 percent of all disasters. Drought and tornados were the second most frequent disasters, comprising 21 percent each of all disaster occurrences. Other disaster declarations were for hurricane and snow storms.

Figure 16:
Past Disaster Occurrences 1975 to 2003



Of the 14 disaster events during the 28-year period, five were local declarations and nine were federal declarations. The dates and types of occurrences are shown in Figure 17. In each of the nine federal declarations, federal assistance was provided to Macon County in the following manner: both public and individual assistance was provided in six declarations; only public assistance was provided in two declarations; and, only individual assistance was provided in one declaration. Beyond financial assistance, federal assistance was provided in the form of crisis counseling, disaster housing, disaster unemployment assistance, and individual and family grants.

Information available through the National Oceanographic and Atmospheric Administration (NOAA) shows that Macon County suffered a total of 70 storm events between January 1950 through February 2003, which is an average of 1.32 events per year. The most frequent storm event during the 53-year time period was thunderstorm and wind storms, with 34 occurrences resulting in a total of $219,000 in property damage and $17,000 in crop damage. Thunderstorms and wind storms were followed by hail, with 18 events resulting in $60,000 in property damage and $13,000 in crop damage. Of the remaining storm events profiled, Macon County suffered six tornados, six winter storms, three heavy rain / flash floods, one heat/drought event, and one hurricane. Although they occur less frequently, the NOAA information shows that Hurricane Opal and the six tornados were, by far, the most costly to the county, resulting in $.1 billion and $780,000 in property damage, respectively, and the loss of three lives and nine injuries.

Figure 17:

Past Disaster Occurrences, 1975 to 2003
28 Years

Date	Hazard	Local or Federal Declaration
January 1975	Tornado	Federal Declaration
March 1975	Flood	Federal Declaration
October 1975	Severe Storm	Federal Declaration
August 1977	Drought	Federal Declaration
June 1989	Heavy Rain – Flooding	Local
March 1990	Severe Storm – Flooding	Federal Declaration
June to October 1990	Drought	Local
November 1992	Heavy Rain – Flooding	Local
March 1993	Snow Storm	Federal Declaration
October 1995	Hurricane – Opal	Federal Declaration
March 1996	Severe Storm – Tornado	Federal Declaration
February to August 2000	Drought	Local
December 2000	Severe Storm – Tornado	Federal Declaration
March 2001	Heavy Rain – Flooding	Local

Source: Alabama Emergency Management Agency, March 2003

In the initial review of the list of natural hazards, with past occurrence documentation, the LEPC determined that four of the 19 listed hazards were eliminated due to a lack of applicability in Macon County. The four hazards that were eliminated and the reasons why are as follows:

Avalanche: Due to the southern geographic location and existing physiographic conditions of Macon County, the lack of accumulated snowfall and relatively flat to rolling topography, avalanche hazards do not apply.

Coastal erosion: Due to the inland geographic location of Macon County, coastal erosion does not apply.

Tsunami: Due to the inland geographic location of Macon County, tsunamis, or tidal waves, do not apply.

Volcano: Due to the existing physiographic conditions of Macon County, volcanic hazards do not apply.

The list of the remaining 15 hazards was then utilized to identify which hazards had a true potential to impact Macon County. The 15 hazards that were researched follows, along with a definition of each, as provided in FEMA Publication 386-2, *Understanding Your Risks. Identifying hazards and estimating losses*:

Coastal/Tropical Storm: a cyclone (cyclonic, low-pressure system) with maximum with sustained winds greater than 39 miles per hour and less than 74 miles per hour.
Dam Failure: leakage, or collapse, of a structure, or barrier, constructed to hold back flowing water, resulting in massive quantities of water rushing beyond the barrier at rapid speeds and flooding of nearby areas.
Drought: a prolonged period of dry weather; lack of rain.
Earthquake: a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of Earths' tectonic plates.
Expansive Soils: soils that are characterized by swelling, or expanding, when wet and shrinking, or contracting when dry, also referred to as shrink-swell. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
Extreme Heat: a period of sustained high temperatures.
Flood: a natural event for rivers and streams. Excess water from snowfall, rainfall or storm surge accumulates and overflows onto the banks and adjacent flood plains, or adjacent lowlands.
Hailstorm: a storm in which hail falls. Hail is small, rounded pieces of ice that sometimes fall during thunderstorms.
Hurricane: a category of tropical cyclone characterized by thunderstorms and defined surface wind circulation. Hurricanes develop over warm waters and are caused by the atmospheric instability created by the collision of warm air with cooler air.
Land Subsidence/Sinkholes: Sinkholes are caused by a loss of support, roof collapse and/or raveling. Loss of support occurs when decreases of groundwater reduce the buoyant support of groundwater cavities. The collapse of the roof causes a subsurface cavity. Raveling is the slow erosion of unconsolidated sediments moving from one area into another underground opening. A visible sinkhole is formed when the collapse of an unsupported opening results in the enlargement of the opening beyond the ability of the covering material (rock or soil) to bridge the opening.
Landslide: a downward movement of a slope and materials under the influence of gravity. Includes rock falls, deep failure of slopes, and shallow debris flows. Landslides can be triggered by both natural and man-made changes in the environment. These changes may result from weakness in the composition of the soil, heavy rain or changes in the groundwater level. Man-made landslides may result from changes in slope caused by terracing for agriculture, cut-and-fill in construction areas, mining operations, or changes in soil moisture due to changes in irrigation, groundwater or surface water.
Severe Winter Storm: a prolonged period of rain and/or storms with freezing temperatures, resulting in sleet and ice and freezing of surfaces.
Tornado: a violently rotating column of air extending from a thunderstorm to the ground.

Wildfire: an uncontrollable fire spreading through vegetative fuels, exposing and possibly consuming structures. Wildfires often begin unnoticed and spread quickly and are usually signaled by dense smoke that fills the area for miles around.
Thunderstorm: a storm with strong winds but little or no rain or hail, etc.

A review of historical and existing plans and regulations for Macon County revealed that there is very little current information that is directly related to hazard identification or natural hazard mitigation. Existing information does include police and fire protection services and needs; a plan for the protection and preservation of environmentally-sensitive areas; and statements as to the need for road and bridge improvements, limitations to development in flood-prone areas, the increase in fire hazards due to unsafe buildings and the lack of adequate medical facilities in the county. The review of the existing plans shows that the potential for disaster events has been a consideration in past growth and development planning for the county, which is evident is the lack of development that has occurred in the flood-prone areas of the county. The plan review also resulted in a summary of available tools that can be used in hazard mitigation activities. These tools include flood damage prevention ordinances, subdivision regulations, zoning ordinances, capital improvement programs, and proposed dangerous buildings ordinance.

Historical plans that were reviewed include:

Areawide Plan: Fire Protection Study, 1974;
Areawide Study: Environmental Assets, 1975;
Areawide Plan: Rural Land Use Analysis, 1977;
Areawide Study: Environmental Review Manual, 1977;
Macon County, Alabama Community Facilities Plan, Public Improvements Program and Capital Improvements Budget, 1977;
Areawide Land Development Plan, 1978; and
Proposed Notasulga Zoning Ordinance.

Current plans that were reviewed include:

Macon County Emergency Operations Plan;
Macon County Flood Damage Prevention Ordinance;
Tuskegee and Macon County Tourism Development Plan;
Tuskegee 2010 Comprehensive Plan;
Tuskegee Zoning Ordinance;
Rural County Highway Development Plan, 1992;
Franklin Comprehensive Plan;
Shorter Comprehensive Plan; and
Bullock/Macon Counties Strategic Plan 2000 – 2012.

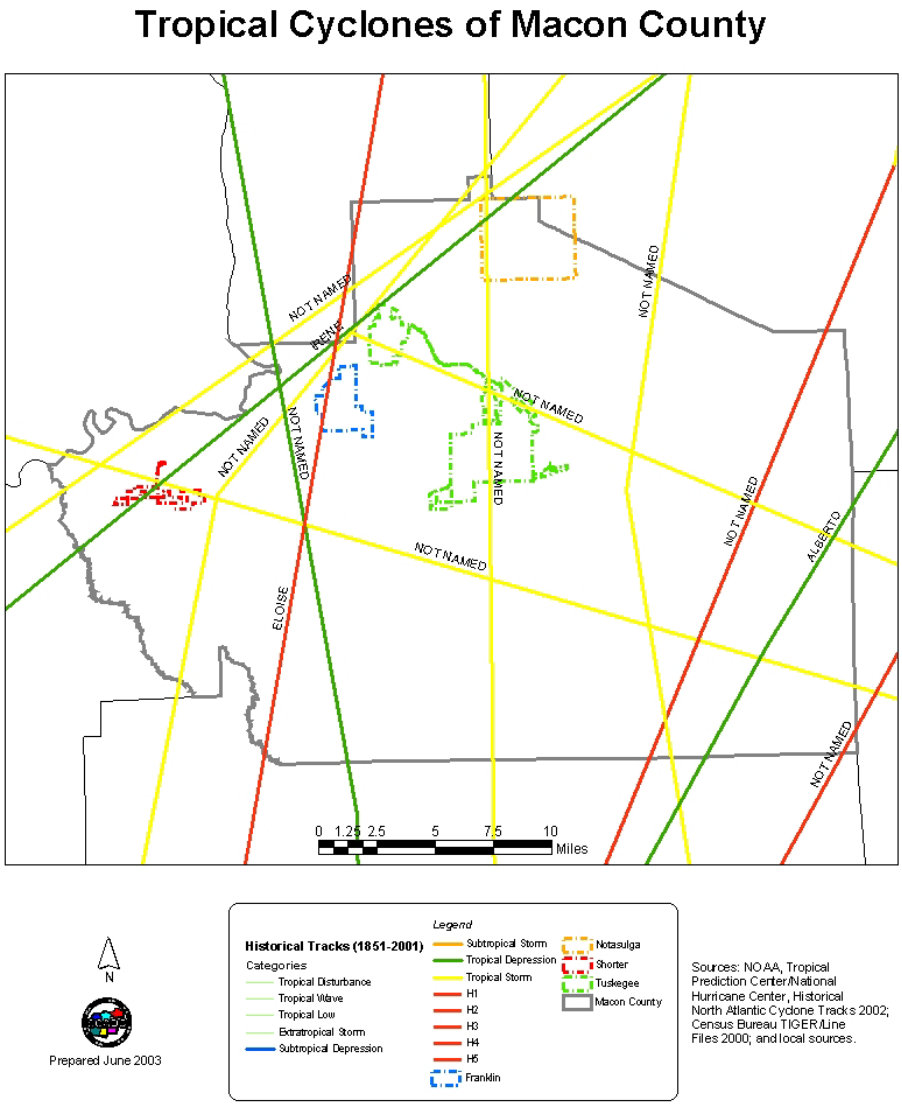
3.2 Hazard Profiling

The following profile for each of the 15 hazards that could impact Macon County includes past occurrences, location, general descriptions and probability. Hazards which are similar in nature and impact have been grouped together. Historical data, unless noted otherwise, was gathered from the National Climatic Data Center (NCDC) from a time period of January 1, 1950 through April 30, 2004.

Coastal Storms and Hurricanes.

Ten tropical cyclones have occurred in Macon County during the 150-year period from 1851 through 2001. As shown in Figure 18, six of the ten tracks of the tropical cyclones were minor tropical storms. However, two H1 tropical cyclones and three tropical depressions have occurred in the county in the referenced time period. The NCDC only reports one hurricane, Opal on October 4, 1995, as having an impact on Macon County. Hurricane Opal

Figure 18:



resulted in two deaths, approximately $100 million in property damage and $10 million in crop damage. The pattern of tropical cyclones and Hurricane Opal affected the entire county. There is only a limited probability of experiencing hurricane conditions in Macon County. Since the affects of Hurricane Opal were high winds and rain, similar to a thunderstorm, the effects of a coastal storms and hurricane can be addressed with other severe thunderstorms and tornadoes.

Dam Failure.

There are no records of prior dam failures in any of the four municipalities or the unincorporated portions of Macon County. According to the Geographical Names Information System, there are approximately 24 small dam structures located within Macon County, with elevations ranging between 299 feet above sea level to 474 feet above sea level. The overall elevation of Macon County is 299 feet above sea level. Of these dams, one is the Tuskegee City Lake Dam and another is the Notasulga City Lake Dam. The remainder of the dams appear to be private.

The Tallapoosa River forms the northwest border of Macon County. There are three dams located on the Tallapoosa River just north of Macon County, which are Thurlow Dam, Yates Dam, and Martin Dam, and further north in Randolph County is R.L. Harris Dam. All of the four dams are well-maintained by the Alabama Power Company for hydroelectric purposes. If all four dams, however, were to fail at the same time, the resulting flood waters have the potential to wash away the greater portion of western Macon County.

While there is low probability of dam failure to any significant extent in Macon County, it should be noted that there is no inspection provisions available for dams on private property. Even failure of a dam with a small impoundment could result in significant property damage at the least. This hazard is considered to have a county-wide impact on Macon County.

Drought and Extreme Heat.

Extreme heat and drought often occur simultaneously in Macon County. Drought is a prolonged period of dry weather due to a lack of rain. The National Oceanic and Atmospheric Administration reports that the annual normal daily mean temperature for Montgomery, which is the closest station to Macon County, between 1971 and 2000 is 65.1 degrees Fahrenheit, with the warmest month being July at 81.8 degrees Fahrenheit and the coldest month being January at 46.6 degrees Fahrenheit. The annual normal monthly precipitation during the same time period is 54.77 inches with an average of 108 days per year with precipitation of more than .01 inch.

Macon County's economic dependence upon agriculture, coupled with the low per capita income of the county, at $13,714 according to the 2000

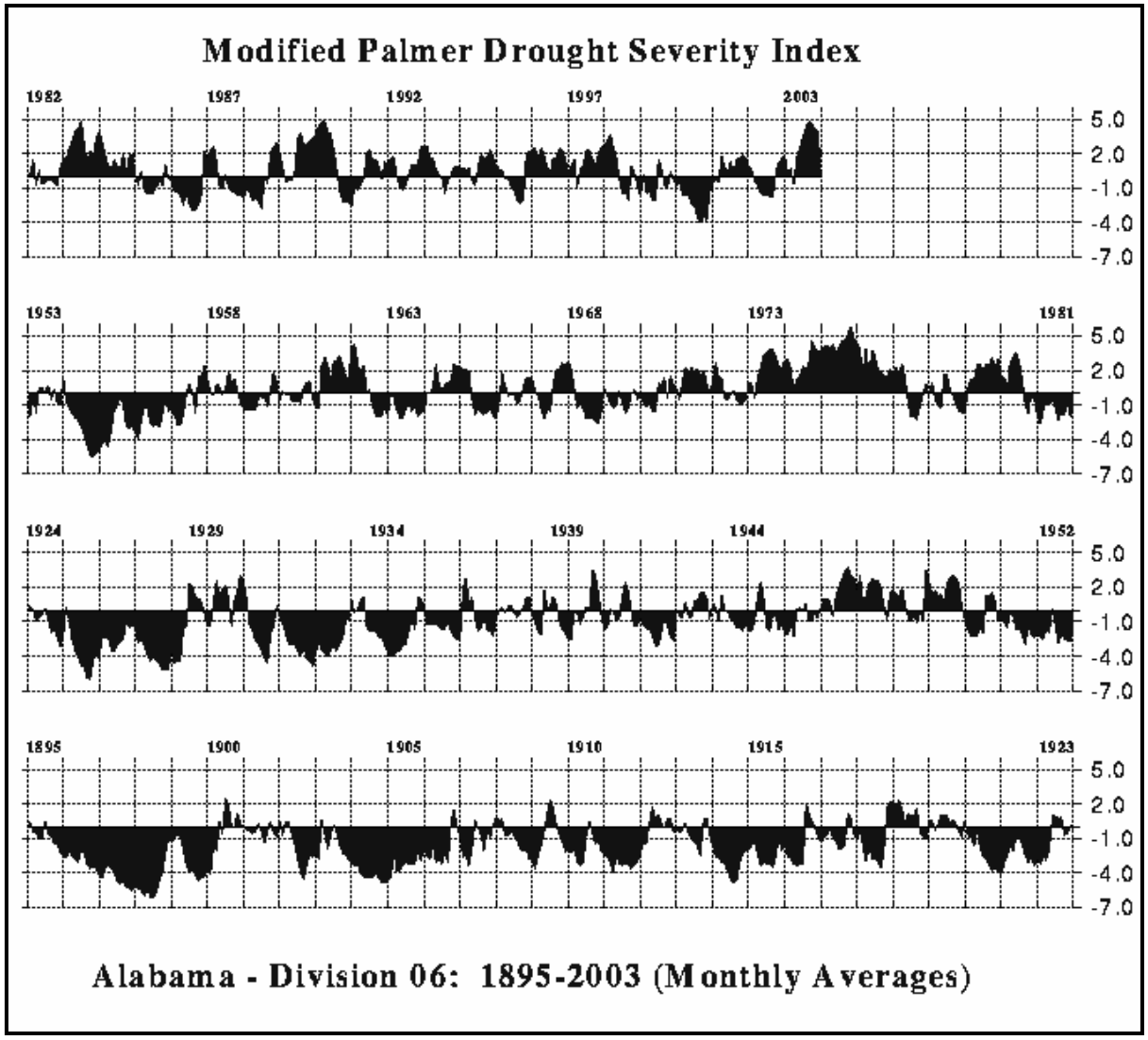
Census, makes the county population very susceptible to extreme changes in weather. Conditions of extreme heat and drought affect the population's ability to produce livable earnings and produce dangerous living conditions for the low-income sector of the population due to an inability to find refuge from extreme heat.

The NCDC reports no drought or extreme heat events between 1950 and 2004. The U.S. Geological Survey (USGS) reports, however, in a publication entitled National Weather Summary 1988-89 – Floods and Droughts: Alabama, statewide droughts occurred in 1938 to 1945, 1950 to 1963, 1964 to 1970, 1980 to 1982, and 1984 to 1988, with 1954 being the most extreme drought year on record in Alabama. This report covers a time period of 102 years between 1882 and 1988. During this time frame, Alabama was in a drought state for 34 years, collectively, or 33 percent of the time period. Each of these drought events was reported to have a recurrence interval of between 10 and 60 years.

Figure 19 shows the Modified Palmer Drought Severity Index for the period from 1895 to 2003 for Alabama Division 6 which covers the central portion of the state, including Macon County. According to this Palmer Index, periods of drought roughly align with the periods reported in the USGS report. The Palmer Modified Drought Index reports periods of drought over a 2.0 index in 1930, 1936, 1940, 1946-1949, 1957, 19961-1962, 1973-1976, 1979-1980, 1983, 1989-1990, 1997-1998 and 2003. Over the 108 year period reported in the Palmer Index, the Division 6 area underwent drought conditions in 21 of those years, or 19 percent of the time period.

The incidence of past extreme heat and drought conditions, coupled with the overall climatic conditions of Macon County and the high recurrence interval reported by USGS make the probability of future occurrences of extreme heat and drought high, impacting the entire county. Impacts from extreme heat and drought on Macon County and its jurisdictions include the following: (1) Heat stroke and dehydration is a medical danger among the entire population; (2) The agricultural community is at risk in terms of property and crop damage from extreme heat and drought; (3) The high percentage of the population with low income or living in poverty and those living in unincorporated areas without access to public water are particularly at risk due to dry wells and lack of financial resources for air conditioning to ward off the impact of extreme heat; and (4) Extreme heat and drought have damaging affects on the local road conditions, making repairs necessary more frequently to ensure unimpeded access to all parts of the Macon County.

Figure 19:



Earthquakes.

The NCDC does not report any past occurrences of earthquakes in Macon County, although they have been known to occur in other parts of the state. Information available from the Geological Survey of Alabama (GSA) also shows that Macon County has never been impacted by an earthquake in their reporting period from 1916 through 2003. Earthquakes in Alabama are usually located in either the New Madrid Seismic Zone (NMSZ) or the Southern Appalachian Seismic Zone (SASZ). According to USGS, large earthquakes in either of these two seismic zones have the potential to affect the northern half of Alabama. The SASZ extends from Roanoke, Virginia in a southwesterly direction, to central Alabama following the Appalachian Mountains and is the zone in closest proximity to Macon County.

Historical records (1886 through 1998) document 118 earthquakes in Alabama. Although an earthquake can occur anywhere in Alabama, the historic pattern of epicenters has always been outside southeast Alabama. Also according to USGS, earthquakes occurring in Alabama are not likely to do serious damage. However, the entire county and all four municipalities are located in an area of Alabama that is subject to experiencing minor seismic waves related to an earthquake occurring elsewhere in Alabama.

Figures 20 and 21 show maps, produced by USGS, of peak acceleration with 10 percent probability of exceedance in 50 years and ground-shaking hazards occurring from earthquakes. The central portion of Alabama, where Macon County is located, is in the very low impact zone on both of these maps. Due to the lack of past occurrence and the geologic characteristics of the State of Alabama and Macon County, there is a very low probability of future occurrences of an earthquake epicenter in Macon County and a low probability of severe damage occurring anywhere in Macon County from earthquakes occurring in other areas of the Southeast.

Figure 20:

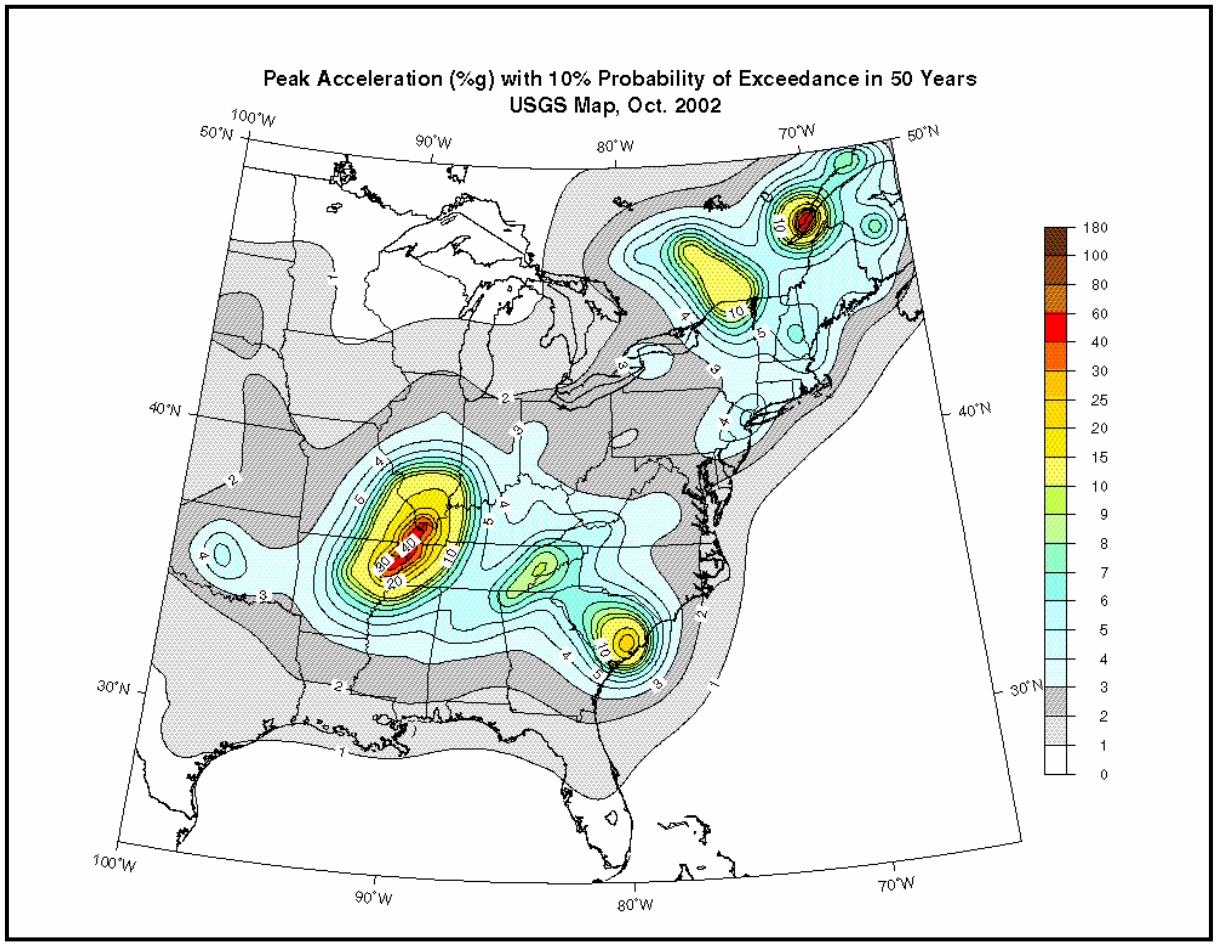
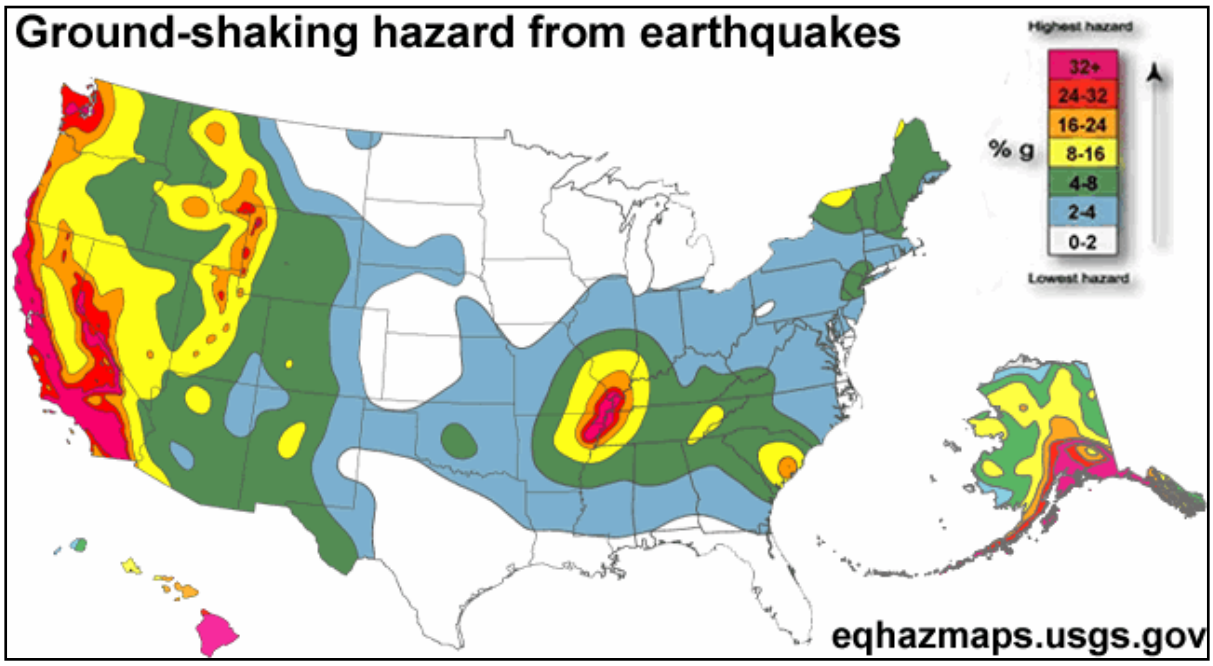


Figure 21:



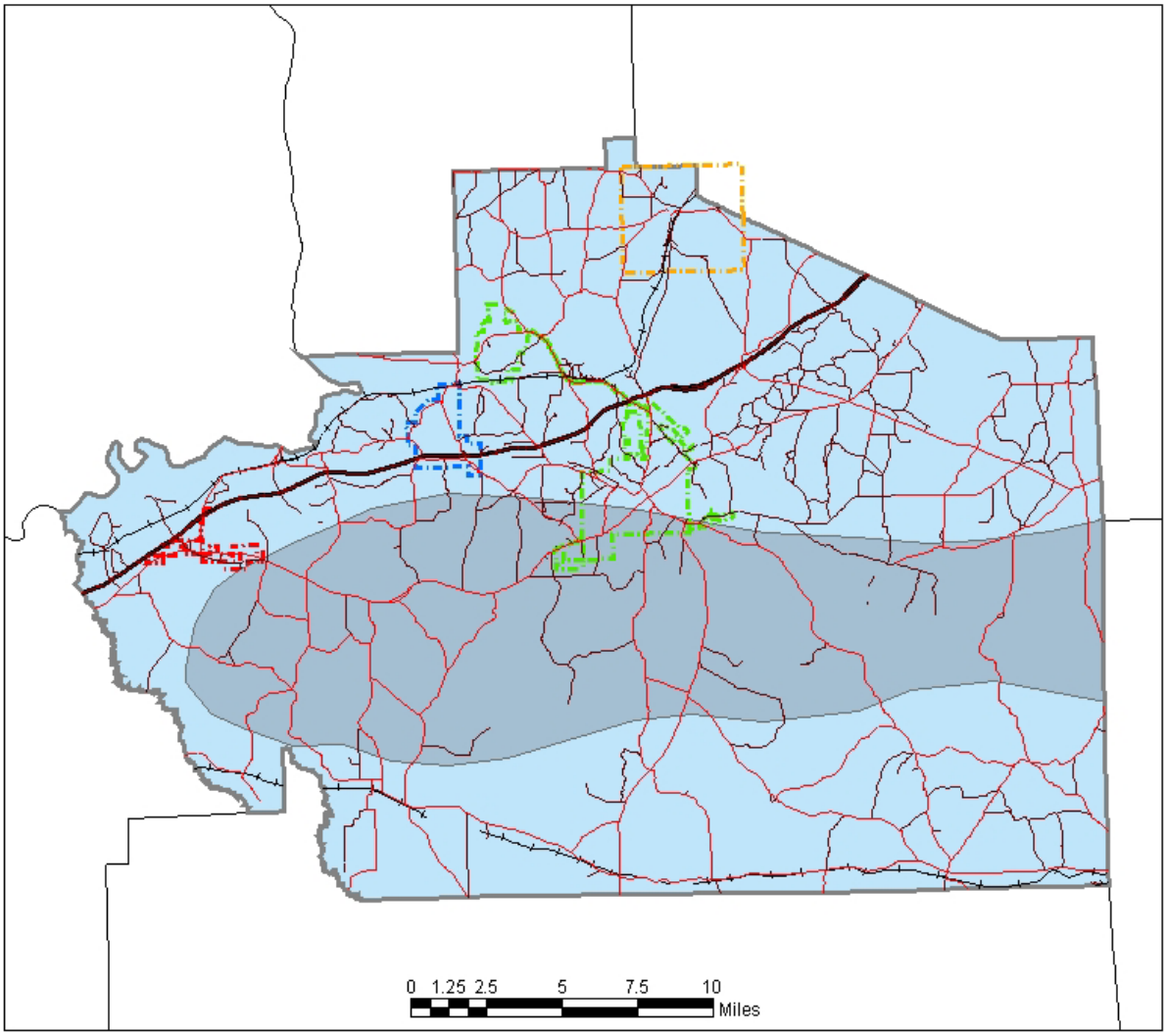
Land Subsidence /Expansive Soils / Sinkholes / Landslides.

GSA information reveals that Macon County has a moderate incidence of landslides in the central portion of the county, as shown in Figure 22. Additionally, there are outcrops of carbonite rocks in the southern portion of Macon County, making the area susceptible to sinkholes. According to the GSA data, however, Macon County does not have currently have active sinkholes and land subsidence. Nor, have there been any reports of sinkholes or landslides by citizens or by the Macon County EMA. There is, however, some stream bank erosion that is expected to continue as a natural function of stream morphology.

Given the lack of past occurrences and lack of data indicating any physical change that would increase the incidence of sinkholes and landslides, it is predicted that the probability of future occurrences of sinkholes and landslides is very low. However, citizens have commented on significant soil erosion along stream banks and road washing in the central portion of Macon County where there is a moderate incidence of landslides. It would be safe to assume that while the probability of sinkholes and landslides is low, the soils in this area of the county are more unstable and prone to erosion than in other areas. Due to the instability of the soils in this area, the incidence of man-induced landslides could be higher due the lack of application of best management practices in all fields, including engineering and construction, agriculture, and silviculture.

Figure 22:

Landslide Potential of Macon County



N

Prepared June 2003

Legend

- Combination- High
- Incidence- Low
- Primary road with limited access
- Primary road
- Secondary and connecting road
- Railroad
- Franklin
- Notasulga
- Shorter
- Tuskegee
- Macon County

Sources: USGS, Landslide Incidence & Susceptibility in the Conterminous US, 2001; Census Bureau TIGER/Line Files 2000; and local sources.

Flooding.

Flooding is one of the most common hazards in the United States and kills an average of 150 people a year nationwide. While Macon County is not highly susceptible to severe inundation of flood waters, it is highly susceptible to the rapid occurrence of flash floods which make parts of the county inaccessible by road and interrupt the delivery of services and the ability to respond in an emergency.

The NCDC reports five occurrences of flooding in Macon County in a 50-year time span between 1950 and 2004. Three of these affected the entire county, one affected the Town of Franklin and one was a recording of the Tallapoosa River cresting at 46.27 feet which is above flood stage at the flood stage of 40 feet at the Milstead Station. The combined loss of these five floods was $67,000 in property damage and $5,000 in crop damage. The Alabama Emergency Management Agency, however, reports five flooding events separate from those listed by NCDC. Two of the AEMA floods were federal declarations and the remaining three were local declarations.

The Macon County Engineer reports that the necessary road improvements to provide accessibility throughout Macon County, even in flooding conditions, are significant totaling $3,325,000 to improve just over 23 miles of roadway, as shown in Figure 23. Improvements, however, would provide necessary access and limit erosion and sedimentation during heavy rains and flash floods. The roads that currently need improvements are located in the southern half of the county in unincorporated areas. Currently, the Macon County Commission spends approximately $1 million per year in road maintenance to keep roads passable in emergency events.

Figure 23:

Macon County Necessary Road Improvements Due to Flooding		
Road	**Length**	**Estimated Cost**
St. Marks Road	2 miles	$200,000
Pecola Road	.75 mile	$75,000
County Road 2	10 miles	$2,000,000
County Road 67	7 miles	$700,000
County Road 73	3.5 miles	$350,000
Total	**23.25 miles**	**$3,325,000**
Source: Macon County Engineering Department		

Since half of the reported flood events have impacted the entire county, it is safe to assume that all of Macon County is susceptible to flooding at one time or another. Flooding is most likely to occur in the floodplain areas found along the four major streams. Floodplains in Macon County (see Figure 14 in Chapter 2) lie in a southwest to northeast pattern across the

entire county and are found in the north, central and south parts of the county. The floodplain areas are narrow and linear, following stream beds and to some degree larger tributaries of the Uphapee, Chewacla, Opintlocco, Calebee and Cubahatchee creeks. The floodplains are not expansive, with the widest areas being approximately one mile in width.

Macon County does not have a history of the severe flooding that is found in low elevation areas such as Elba, Alabama. But, local residents report continual flash flooding and road washing and erosion as a result of heavy rains and localized flash floods. Additionally, local residents feel that flash flooding is more dangerous, although less extreme, due to the quickness of the event and lack of warning time.

The probability of continued flooding occurrences is high based on the record of past events and due to the physical presence of floodplains and soils with characteristics that are conducive to flooding.

Hail.

In the 54-year time period between 1950 and 2004, the NCDC reports 34 occurrences of hail in Macon County, affecting all municipalities, as well as the unincorporated portions of the county. Although no deaths or injuries have been reported as a result of hail, the cumulative damage totals $205,000 in property damage and $13,000 in crop damage.

Hail is most often associated with thunderstorms and given the climatic conditions of Macon County and record of past occurrences, it is probable that the incidence of future hail events is moderate to high.

Ice Storm.

Only two occurrences of snow and ice have been reported by the NCDC between 1950 and 2004. The first was on December 18, 1996, resulting in $240,000 in property damage and $320,000 in crop damage. The second event was a snowstorm on January 2, 2002, resulting in no property or crop damage being reported. The Southeast Regional Climate Center reports a monthly average total snowfall of .2-inch in January, with snow not being recorded at any other time in the year. The recording time period was between 1948 and 2004. The annual average minimum temperature in the same time period was 51.7 degrees Fahrenheit and the month with the lowest average minimal temperature was January, at 33.6 degrees Fahrenheit.

Although Macon County is located in a temperate to subtropical climate, severe winter storms, ice storms and snowfall do occur. Generally, the damage from ice storms and freezing temperatures is significantly higher than snowfall, due to freezing of infrastructures such as water pipes, impassable roads and cracking and falling of frozen tree limbs on power

lines, communication lines and structures. When these events do occur, they impact the entire county, due in part to the lack of preparation made by citizens for this type of cold weather. While the probability of future occurrence on a regular basis is low, the probability is still there for future occurrence of occasional winter storm and ice storm events.

Tornado / Thunderstorms.

The most violent of tornadoes are capable of tremendous destruction with wind speeds of 250 miles per hour or more. Damage paths can be in excess of one mile wide and 50 miles long. Macon County is located in Wind Zone III and is associated with 200 miles per hour wind speeds. Tornado and thunderstorm paths are not localized and have the potential to affect any portion of or the entire county during a given event. Since 1950, tornadoes have caused approximately $793,000 in property damage alone.

All except one of the tornado events impacted the entire county. The only tornado that did not impact the entire county was F0 in magnitude, affecting only the Town of Shorter on December 16, 2000, while the remainder of the tornado events were F1 and F2 in magnitude.

In the same time period, the NCDC reported 42 thunderstorm and high wind events, resulting in one injury, $326,000 in property damage and $17,000 in crop damage, as shown in Figure 25. The mathematical rate of incidence for tornado events is once every nine years and for thunderstorm events is approximately once every 1.3 years. There is no true way to predict the probability of future occurrence, except to acknowledge that Macon County is in an area with climatic conditions susceptible to tornadoes and thunderstorms. Using the mathematical rate of incidence, the probability for future occurrences is high. Tornados and thunderstorms appear to impact all jurisdictions in Macon County. While loss of life and injuries is not frequent, the property damage is significant. Additionally, by nature, tornados leave very little response time for residents to take cover.

Figure 24:

Profile of Tornado Events in Macon County, 1950 to 2004				
Tornado				
Date	**Magnitude**	**Loss of Life**	**Injuries**	**Financial Loss**
Jan 10, 1975	F2	0	9	$250,000
May 16, 1983	F1	0	0	$3,000
May 3, 1984	F1	0	0	$25,000
May 3, 1984	F2	0	0	$250,000
Nov 26, 1986	F1	0	0	$250,000
Dec 16, 2000	F0	0	0	$15,000
Total	**6 events**	**0**	**9**	**$793,000**

Figure 25:

Profile of Thunderstorm and High Wind Events in Macon County 1950 to 2004						
Location or County	**Date**	**Magnitude**	**Death**	**Injury**	**Property Damage**	**Crop Damage**
1 MACON	12/23/1956	0 kts.	0	0	0	0
2 MACON	02/05/1971	0 kts.	0	0	0	0
3 MACON	04/13/1979	0 kts.	0	0	0	0
4 MACON	05/03/1984	0 kts.	0	0	0	0
5 MACON	04/05/1985	0 kts.	0	0	0	0
6 MACON	07/30/1986	0 kts.	0	0	0	0
7 MACON	04/18/1988	0 kts.	0	0	0	0
8 MACON	07/15/1988	0 kts.	0	0	0	0
9 MACON	03/21/1989	0 kts.	0	0	0	0
10 MACON	06/05/1989	0 kts.	0	0	0	0
11 MACON	06/05/1989	0 kts.	0	0	0	0
12 MACON	02/10/1990	0 kts.	0	0	0	0
13 MACON	02/16/1990	0 kts.	0	0	0	0
14 MACON	02/22/1990	0 kts.	0	0	0	0
15 MACON	03/29/1991	0 kts.	0	0	0	0
16 MACON	03/29/1991	0 kts.	0	0	0	0
17 MACON	04/09/1991	0 kts.	0	0	0	0
18 MACON	05/05/1991	0 kts.	0	0	0	0
19 MACON	05/05/1991	0 kts.	0	0	0	0
20 MACON	06/26/1992	0 kts.	0	0	0	0
21 MACON	07/03/1992	0 kts.	0	0	0	0
22 MACON	08/27/1992	0 kts.	0	0	0	0
23 MACON	08/27/1992	0 kts.	0	0	0	0
24 Tallassee	05/15/1995	N/A	0	0	0	0
25 Tuskegee	08/19/1995	N/A	0	0	12K	0
26 Tuskegee	03/06/1996	65 kts.	0	0	150K	12K
27 Shorter	03/06/1996	60 kts.	0	1	50K	0K
28 Tuskegee	03/06/1996	60 kts.	0	0	35K	0

Profile of Thunderstorm and High Wind Events in Macon County, Continued 1950 to 2004						
Location or County	**Date**	**Magnitude**	**Death**	**Injury**	**Property Damage**	**Crop Damage**
29 Tuskegee	03/30/1997	50 kts.	0	0	5K	0K
30 Tuskegee	06/05/1998	55 kts.	0	0	10K	5K
31 Notasulga	03/03/1999	55 kts.	0	0	2K	0K
32 Tuskegee	03/19/2000	55 kts.	0	0	2K	0K
33 Countywide	07/20/2000	55 kts.	0	0	50K	0K
34 Tuskegee	08/10/2000	50 kts.	0	0	3K	0K
35 Notasulga	08/10/2000	50 kts.	0	0	2K	0K
36 Tuskegee	01/19/2001	55 kts.	0	0	2K	0K
37 Notasulga	03/15/2001	60 kts.	0	0	18K	0K
38 Shorter	06/14/2001	50 kts.	0	0	3K	0K
39 Tuskegee	08/20/2002	50 kts.	0	0	8K	0K
40 Shorter	08/20/2002	50 kts.	0	0	2K	0K
41 Tuskegee	04/24/2003	55 kts.	0	0	3K	0K
42 Shorter	06/17/2003	50 kts.	0	0	5K	0K
Totals			0	1	$362K	$17K

Wildfire.

Wildfires are a significant hazard in Macon County due, in large part, to the presence of the Tuskegee National Forest and a very high proportion of forested land in the county. Of the total land in Macon County, 81 percent is in forested land – totaling 318,800 acres of forest land. According to the Alabama Forestry Commission records from 1995 to 2003, Macon County averages 77.3 fires per year. The average size fire is 11.6 acres resulting in an average 1,052.4 acres burned per year. Macon County is ranked 14th in the State in the average number of fires per year and 8th in the State in the average number of acres burned per year. These numbers appear to be rising. In looking at a 5-year average, Macon County has an average of 79 fires per year, resulting in an average of 1,317.5 acre burned per year.

Due to an expanding urban interface area, the threat of human danger from wildfires is steadily increasing in Macon County. Beyond loss of life, injury and property damage issues that arise from wildfires, Macon County's dependence upon the timber industry means that the overall economic well-being of the county is threatened by wildfires as well. The fact that the

average annual value of stumpage timber sold in Macon County is over $6 million illustrates this point.

Secondary impacts from wildfires include a loss of tax revenue due to a loss of timber; erosion which leads to road and bridge deterioration; loss of habitat and a threat to endangered species; threatened water quality and stream sedimentation. The risks and vulnerability associated with wildfire are only increasing with continued urban sprawl.

3.3 Vulnerability

With the information from the hazard profiles, the Macon County Local Emergency Planning Committee (LEPC) was able to prioritize those hazards that have the most potential to impact Macon County and its jurisdictions in terms of vulnerability and risk. Vulnerability was assessed by ranking the hazards in the following categories: Priority 1, which equals high vulnerability; Priority 2, which equals moderate vulnerability; or, Priority 3, which equals low vulnerability. Within each priority group, or vulnerability category, each hazard was ranked in terms of risk, with the number one hazard having the highest risk and the number 15 hazard having the lowest risk.

It was further determined by the LEPC that the vulnerability to each of the 15 hazards is equal throughout the county, with one exception. The probability for future incidence of sinkholes, land subsidence and landslides is concentrated in the south central unincorporated portion of the county, only mildly impacting Tuskegee and Shorter and not having any impact on Franklin and Notasulga.

As a result of the committee discussions, six hazards were identified as Priority 1 hazards, meaning that they were the most likely to have the greatest and/or most frequent impact on Macon County. In order of priority, or risk, the six Priority 1 hazards are:

1. tornados,
2. wildfire,
3. extreme heat,
4. drought,
5. floods, and
6. thunderstorms.

Priority 2 hazards include hail, hurricane, ice storm and expansive soil/sink holes; and, Priority 3 hazards include landslide, dam failure, earthquake and coastal storms. The hazard identification, vulnerability and risk assessment are shown in Figure 26.

Figure 26:

Macon County Hazard Identification, Vulnerability and Risk					
Hazard	Vulnerability				Overall Risk
	Priority 1	Priority 2	Priority 3	N/A	
Avalanche				16	None
Coastal Erosion				17	None
Coastal Storm			14		Low
Dam Failure			12		Low
Drought	4				Moderate
Earthquake			13		Low
Expansive Soils/Sinkholes		10			Low
Extreme Heat	3				High
Flood	5				Moderate
Hail		7			Moderate
Hurricane		8			Moderate
Land Subsidence			15		Low
Landslide			11		Low
Ice Storm		9			Low
Tornado	1				High
Tsunami				18	None
Volcano				19	None
Wildfire	2				High
Thunderstorm	6				High

The *Alabama Hazard Risk and Vulnerability Analysis,* produced by the AEMA, shows that Macon County has a social vulnerability score of 8.07, which is the eighth highest in the state. The high social vulnerability is due to the high percentage of the population under 18 years of age and over 64 years of age, the high percentage of minority population and high percentage of persons with a low median income. The vulnerability and risk analysis conducted during the Macon County hazard mitigation planning process, however, does not agree with the State's vulnerability and risk analysis as reported in State's vulnerability analysis for Macon County:

Hazard	State	Macon County
Flood Risk	Low	High
Flood Vulnerability	Low	Moderate
Hurricane Risk	Very High	Moderate
Hurricane Vulnerability	Very High	Moderate
Tornado Risk	Low	High
Tornado Vulnerability	Low	High

The reason for the differences between the State assessment and the local assessment have not yet been determined; however, it will be an on-going task as the State EMA continues to update the statewide hazard mitigation plan and Macon County continues to implement, monitor and evaluate the local plan to bring the vulnerability and risk assessment by both organizations into agreement.

Due to similarity of events and impacts, the six hazards to which Macon County and its jurisdictions are most vulnerable have been condensed into four hazard groups: tornado and thunderstorms, wildfire, extreme heat and drought and flooding. The following is an assessment of each of the four priority one hazard categories in terms of risk and vulnerability, as defined. Information provided for each hazard group includes the degree of vulnerability as noted by the priority rating given to each hazard by the Macon County Local Emergency Planning Committee and the degree of impact (risk) on Macon County, its jurisdictions, and its residents, with comments regarding how the hazard might or could affect the county. While it is recognized that there are nine remaining hazards to be addressed (the second and third priority hazards) the degree of vulnerability and risk is so much greater with the first priority hazards that these six hazards are all that is being addressed in terms of vulnerability, identification of critical facilities and mitigation actions in this first natural hazard mitigation plan. Critical facilities and mitigation actions for the remaining nine hazards will be addressed in the 2009 five-year update, except as how they may relate to the priority one hazards. It is also recognized that many of the mitigation actions taken to address the first priority hazards will have beneficial spillover effects on the mitigation of the second and third priority hazards.

Tornado and Thunderstorm		
Jurisdiction	**Vulnerability**	**Risk**
Macon County	High	High
Town of Franklin	High	High
Town of Notasulga	High	High
Town of Shorter	High	High
City of Tuskegee	High	High

Tornados are the number one hazard risk for Macon County, not due to the frequency of events, but instead, due to the severity of destruction and the limited warning time for response. With the available information as presented, the Macon County LEPC determined that Macon County is severely vulnerable to tornadoes and thunderstorms. Potential impacts from tornadoes and thunderstorms include loss of life and injury; severe property damage with frame, manufactured and congregate housing being the most susceptible; water contamination and water shortage; blocked access and road deterioration; power outages; and disruption of commerce.

Macon County's vulnerability is increased due to a lack of available trained response personnel, slowed emergency response time and an overload at existing medical facilities. Resulting secondary impacts of a tornado or thunderstorm could include panic, anxiety, and depression; power outages; interruption in utility services (communications, water); loss of tax revenue and economic opportunities; spoilage of goods; decreased employer production; and loss of timber income.

Wildfire		
Jurisdiction	**Vulnerability**	**Risk**
Macon County	High	High
Town of Franklin	Moderate	High
Town of Notasulga	Moderate	High
Town of Shorter	Moderate	High
City of Tuskegee	Moderate	High

The agricultural character of Macon County, with a majority of the agriculture being timber production, makes wildfire a significant hazard for residents of the county. The potential impact of wildfire is increasing as residents continue to build residential structures outside the corporate limits, expanding the urban interface area. Additionally, the presence of Tuskegee National Forest increases the potential for wildfire hazards.

With the available information as presented, the Macon County LEPC determined that, while the risk is high for all jurisdictions, only the unincorporated portions of Macon County are highly vulnerable to wildfires while the incorporated municipalities are moderately vulnerable due to distance from timberlands. The urban interface area of all municipalities (the area immediately surrounding the municipality), however, is still highly vulnerable. Potential impacts from wildfires include loss of life and injury; severe property damage; injury to victims and response personnel; smoke inhalation and toxic fumes; decreased visibility for vehicular traffic leading to a documented increase in auto accidents; threats to utility lines and poles, phone boxes and fiber optic lines. Additionally, there is a high incidence of repetitive losses due to wildfires in Macon County.

Extreme Heat and Drought		
Jurisdiction	**Vulnerability**	**Risk**
Macon County	High	Moderate
Town of Franklin	High	Moderate
Town of Notasulga	High	Moderate
Town of Shorter	High	Moderate
City of Tuskegee	High	Moderate

Climatic conditions of Macon County make extreme heat and drought Priority 1 hazards for all jurisdictions. Again, the agricultural community is

particularly at risk in terms of property and crop damage from extreme heat and drought. Also, the high percentage of the population with low income or living in poverty and those living in unincorporated areas without access to public water are particularly at risk due to dry wells and lack of financial resources for air conditioning to ward off the impact of extreme heat.

The Macon County LEPC determined that the county's vulnerability to extreme heat and drought is moderate with the most severe threat being to county's elderly and low-income population. Extreme heat and drought also places an increased demand on medical services and emergency response services that are already in short supply. Additional impacts on the county due to extreme heat and drought include increased road cracking and road repairs resulting in higher maintenance costs and inaccessibility to some portions of the county; increased power and water usage resulting in higher payments and sometimes higher rates; increased fire potential; increased loss of vegetation and property damage with the most significant threat to agricultural production including crops, timber and livestock; an increased threat to the quantity and quality of water in the Tallapoosa River; and increased anxiety in the population which can result in increased crime.

Flooding		
Jurisdiction	**Vulnerability**	**Risk**
Macon County	High	Moderate
Town of Franklin	High	Moderate
Town of Notasulga	High	Moderate
Town of Shorter	High	Moderate
City of Tuskegee	High	Moderate

Although Macon County does not suffer from extreme property damage or loss of life due to flooding, the repetition and frequency of events makes flooding a Priority 1 hazard. Resulting impacts of riverine flooding in Macon County is seen mostly with crop damage and the interruption of services due to impassable roads and continued road and bridge improvements. Flash flooding, due to soils with rapid runoff and slow permeability characteristics coupled with a high percentage of impervious surfaces, has a greater impact on the developed areas of the county.

With the available information, the Macon County LEPC determined that, while the flooding problem is recurring, the impact of flooding on Macon County is moderate. Potential impacts from flooding is surface and groundwater contamination, increased septic failure, increased stress and anxiety, increased road damage, threat to the rail system, increased agricultural loss for both crops and livestock, and loss of natural habitat. While there is a low threat to life safety and structural conditions, the repetitive losses and damages to the road system make flooding a significant hazard to Macon County.

CHAPTER 4:
RISK ASSESSMENT

As defined previously, risk is the probability that damage to life and property will occur due to impacts from a particular hazard. The following is an initial assessment of losses that could be experienced in Macon County based on existing structural assets and population location and characteristics.

4.1 Structural Assets and Impacts

An inventory of assets and critical facilities susceptible to the first priority hazards within Macon County has been attempted. At the time of this plan's submission to AEMA and FEMA, a complete inventory has not been completed. Values for the different types of buildings (i.e., residential, commercial, industrial, agricultural, institutional, governmental/ educational, and utilities) in Macon County has not been performed. The Macon County EMA and LEPC intend to have this information collected and analyzed by the next five-year major update. Such an analysis should describe the vulnerability of the types and numbers of existing and potential future buildings, infrastructure, and critical facilities located in specific hazard areas. Building values should be obtained from the Macon County Revenue Commissioner's Office and/or from each jurisdiction's property insurance providers.

Figure 27:

Housing Units Vulnerable to First Priority Hazards				
	Tornado and Thunderstorm	Wildfire	Extreme Heat and Drought	Flooding
Unincorporated Area	4870	4870	4870	2435
Town of Franklin	77	20	77	20
Town of Notasulga	446	112	446	0
Town of Shorter	133	33	133	33
City of Tuskegee	5101	1275	5101	1275
Total	10627	6310	10627	3763

4.2 Impacts on Population

As stated in the previous chapter, the entire area of Macon County and the areas of its jurisdictions are considered to be highly vulnerable to all identified first priority natural hazards with the exception of wildfire. While the unincorporated part of Macon County is highly vulnerable to wildfire, the municipalities are moderately vulnerable. Therefore, only a portion of the population will be considered for the municipalities in assessing the risk factor of wildfire. Population figures and number of households vulnerable to the identified first priority hazards are as follows:

Figure 28:

Population Vulnerable to First Priority Hazards				
	Tornado and Thunderstorm	Wildfire	Extreme Heat and Drought	Flooding
Unincorporated Area	10,839	10,839	10,839	10,839
Town of Franklin	149	75	149	149
Town of Notasulga	916	458	916	916
Town of Shorter	355	178	355	355
City of Tuskegee	11,846	2,962	11,846	11,846
Total	24,105	14,512	24,105	24,105

As stated in the previous chapter, the *Alabama Hazard Risk and Vulnerability Analysis* shows that Macon County has a social vulnerability score of 8.07, which is the eighth highest in the state. One factor in the high social vulnerability is due to the high percentage of the population under 18 years of age and over 64 years of age. The median age of Macon County is 32.0, which is considerably lower than that of the State, at 35.8. The City of Tuskegee has the lowest median age, at 26.4; and the Town of Franklin has the highest median age, at 47.1. These populations are particularly vulnerable to disaster events due to their frequent dependency on others for assistance in mobility. A second factor in the high social vulnerability score is the high percentage of persons with a low median income. Macon County has a 2000 per capita income of $13,714, in comparison with that of the State at $18,189. Judging from the median household income map (see Figure 10) approximately 40 percent of the county has a median household income of less than $17,045. These areas are primarily located in the southeast and southwest unincorporated part of the county, farthest away from centralized emergency assistance. Due to limited financial resources and limited accessibility, this population is also particularly vulnerable to any disaster event.

4.3 Critical Facilities

The process of determining Macon County's risk and vulnerability to natural hazards enabled the Macon County LEPC to identify critical facilities that would be impacted in the event of a disaster event. The LEPC identified critical facilities, based on two types of criteria: (1) Buildings or locations vital to the response and recovery effort, such as police and fire stations and

telephone exchanges; and (2) Buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities and nursing homes. The critical facilities were grouped into one of seven categories as shown in Figure 29 below.

Figure 29:

Macon County Critical Facilities	
Continuity of Government	**Water Utilities**
Macon County Courthouse City of Tuskegee Municipal Complex Notasulga Town Hall Franklin Town Hall Shorter Town Hall	Tuskegee Utilities Board Macon County Water Authority Star-Mindingall Water Authority Wall Street Water Authority Beauregard Water Authority
Law Enforcement	**Hospitals/Health Care Agencies**
Macon County Law Enforcement Center Tuskegee Police Department Franklin Police Department Notasulga Police Department Shorter Police Department Tuskegee Univ Department of Public Safety CAVHCSEC Security Victoryland Security	CAVHCSEC Southeast Pediatrics Tuskegee Medical and Surgical Center Central Alabama Comprehensive Health Tuskegee Medical Center Magnolia Haven Nursing Home Salem Nursing and Rehab Ctr of Tuskegee Macon County Health Department
Disaster Coordination / Support Agencies	**Power Utilities**
Macon Co Emergency Mgmt Agency American Red Cross Tuskegee-Macon County Chapter Macon Co Dept of Human Resources Macon-Russell Community Action Agency	Tuskegee Utilities Board Alabama Power Company Dixie Electric Cooperative Alabama Electric Cooperative
Water Sources	**Telephone Central Offices**
Tallapoosa River	BellSouth CenturyTel Union Springs Telephone Company
Fire Protection	**Schools**
Tuskegee Fire Department Franklin Fire Department Notasulga Fire Department Shorter Fire Department CAVHCSEC Fire Department Alabama Forestry Commission – Macon Co Brownville VFD Chehaw VFD District 3 VFD Fort Davis VFD Little Texas VFD Macedonia VFD Warrior Stand VFD	Tuskegee University Southern Community College Booker T. Washington High School Notasulga High School Washington Public School Tuskegee Public School Lewis Adams School St. Joseph Catholic School Tuskegee Institute Middle School Deborah Cannon Wolfe School South Macon School Three Springs School of Tuskegee Tuskegee Headstart Centers (7)
Public Warning Systems	**Mass Care Shelters**
City of Tuskegee Town of Notasulga Town of Shorter	Booker T. Washington High School Deborah Cannon Wolfe School South Macon School Notasulga High School

4.4 Estimated Losses

Figure 30 provides general estimates of property damage that could result from each of the identified Priority 1 hazards based on historical data per event average. Theses are gross estimates of yearly damages and should only be interpreted as indicators of the degree of damage possible. The figures are based solely on past occurrences, as described in other parts of this plan. More accurate methods are available to assess damages, particularly the U.S. Army Corps of Engineers' Flood Damage Assessment (HEC-FDA) model, FEMA's Benefit-Cost Modules, and the HAZUS loss estimation software. The Macon County EMA and LEPC intend to conduct more detailed loss estimates by applying the latest version of HAZUS-MH for multi-hazard assessments, and have this information analyzed by the next five-year major update.

Figure 30:

Estimated Loss Projections Resulting From Priority 1 Hazards

Hazard	**Average Occurrences** (per year)	**Total Deaths**	**Total Injuries**	**Average Crop and Property Loss** (per event/per year)	**Maximum Historical Property Loss** (per event)
Tornado	.11	2	9	$132,167/$14,685	$250,000
Thunderstorm	.78	0	1	$9,024/$7019	$167,000
Wildfires	77.3	*	*	$8,775**/$678,308**	*
Extreme Heat/Drought	.39	*	*	*	*
Flooding	.19	0	0	$14,400/$1,333	$30,000

*This information is not available.
**A factor of $750 per acre (half of avg selling price per acre) was used to determine wildfire losses based on an avg event size of 11.7 acres.

Sources: Storm Events 1950-2004, NCDC, NOAA, 2004; Historic Disaster Declaration for Alabama Counties, Alabama Emergency Management Agency, March 14, 2003; and Alabama Forestry Commission, 2004.

4.5 Development Patterns

As demonstrated in the community profile (Chapter 2), the transportation system of Macon County has played a significant role in past development patterns and continues to do so today. All four of the municipalities in Macon County are located in the northern half of the county within close proximity to Interstate 85. The only major economic event in the recent past has been the location of a Hyundai supplier in Shorter on a site adjacent to Interstate 85. The remainder of Macon County has historically been agricultural in nature and continues to be with a primary dependency upon timber, with 81 percent of the total land area in forestland.

The dependency upon agriculture/forestry is also evident in the population trends of the last 20 years. Between 1980 and 1990, Macon County suffered a 7.1 percent decrease in population; and between 1990 and 2000, the population decreased another 3.3 percent. When looking at the total picture, however, all of the population loss between 1990 and 2000 was in the municipalities: Franklin, at -12.9 percent; Notasulga, at -6.5 percent; Shorter, at -21.1 percent; and Tuskegee, at -5.4 percent. Only the unincorporated part of Macon County realized a population increase from 10,799 persons in 1990 to 10,839 persons in 2000, which was only a .3 percent increase.

Much of the population decrease is due to the lack of economic resources to support the population, which is characterized by low wages and a high unemployment rate, at 6.1 percent as compared to 3.7 percent for the State of Alabama. Efforts are being made to change this situation. With the assistance of the South Central Alabama Development Commission, all of the municipalities of Macon County have developed, or are in the process of developing, comprehensive plans for their locales with economic development as a primary component. In conjunction with the comprehensive plans, the municipalities have developed or revised their existing subdivision regulations and zoning ordinances. To the extent possible, SCADC has ensured that development is limited in sensitive areas such as flood plains. Macon County is also beginning to address land use patterns and growth, having been funded recently by the Appalachian Regional Commission to prepare a land use plan and zoning ordinance. Macon County is only the fifth county in Alabama to have county zoning authority. As this process begins, it will enable the County to address growth and development in hazard-prone areas.

CHAPTER 5:
HAZARD MITIGATION STRATEGY

The Hazard Mitigation Strategy outlines methods, or action steps, for implementation of the Macon County Natural Hazard Mitigation Plan over a five year time period. The strategy includes goals and objectives that were developed to guide the development of the plan and the subsequent mitigation efforts. The goals and objectives are followed by specific mitigation action steps to be implemented. The list of action steps includes an estimated cost per item and designates who the responsible agency or agencies should be. The final portion of the mitigation strategy is a five-year time schedule and cost breakdown per year for implementation. With input by from the governments and non-governmental organizations represented on the LEPC, and from public input received at the public meetings, the following goals and objectives were established by the LEPC to guide hazard mitigation efforts on an on-going basis beyond the five-year time frame of the implementation strategy. These goals and objectives were established for the County and all of its municipalities.

Goal: **Promote natural hazard mitigation as a means to decrease loss of life, property damage and economic loss during a disaster occurrence.**

Objective: Establish a full warning system for notification of impending disasters throughout Macon County.

Objective: Ensure that adequate protection shelters are available for use during disaster occurrences.

Objective: Develop and adopt, or amend, and enforce land use regulations that support natural hazard mitigation efforts throughout Macon County.

Objective: Implement fire protection measures to decrease potential for loss of life and property damage.

Objective: Limit impact of heat and drought on human health, property damage and agricultural losses.

Objective: Improve infrastructural facilities to limit the impact of natural hazard events.

Objective: Prepare and provide for emergency utility services before and during a disaster event.

Goal: Provide on-going support of the Macon County Emergency Management efforts to make Macon County less vulnerable to natural disasters.

Objective: Ensure that the Macon County Hazard Mitigation Plan remains current and is implemented.

Objective: Improve coordination and communication between emergency response organizations and highly vulnerable entities.

Goal: Educate general population about natural hazards and hazard mitigation options.

Objective: Establish and implement hazard mitigation public awareness program.

Objective: Establish and promote disaster prevention education programs, utilizing all forms of media (e.g., print, TV, internet websites - government and related non-governmental) to help distribute information and materials.

The Macon County Natural Hazard Mitigation Plan includes a total of 43 projects, or action steps, totaling $15,887,899.00 in expenditures over five years. A large portion of the total cost is for road improvements that Macon County will be working on with the Alabama Department of Transportation. The total expenditures without road improvements is $562,900.00 equating to an average of $112, 580.00 per year. Sources for funding include federal and state grant funds, the Macon County Commission, the Macon County EMA, the City of Tuskegee, the Towns of Franklin, Notasulga and Shorter, local donations and private funds. The amount from each funding source (including the road improvements) is $2,897,875 in state and federal funds; $897,000 in county funds; $52,350 in local municipal funds; $73,675 in Macon County EMA funds; $9,000 in local donations; and $87,500 in private funds. A summary of the mitigation strategy cost per year and a cost allocation by funding sources are located in Appendix B.

Of the total 43 mitigation projects, 20 projects are mitigation activities that address all hazards. Of the remaining 23 projects, seven address tornados and thunderstorms, five each address wildfires and flooding, and six address extreme heat and drought.

Goal A: Promote natural hazard mitigation as a means to decrease loss of life, property damage and economic loss during a disaster occurrence.

Objective 1: **Establish a full warning system for notification of impending disasters throughout Macon County.**					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Develop a warning plan to install approximately 10 additional sirens at targeted sites to adequately cover population pockets in rural Macon County.	$150,000.00	Federal, State & Local	Macon County	Tornado/ Thunderstorm	1-5
Designate a central emergency coordinator in each municipality and community to better facilitate communications with the Macon County Emergency Management Agency.	$0.00	No funding	All	All	1-5
Construct warning signage for limited visibility due to forest fires on major roads in targeted areas.	$20,000.00	Federal, State & Local	Macon County	Wildfire	1, 3
Investigate use of phone messaging system to provide warning of all impending hazardous conditions.	$0.00	No funding	All	All	1
Total	$170,000.00				

Goal A: Promote natural hazard mitigation as a means to decrease loss of life, property damage and economic loss during a disaster occurrence.

Objective 2: **Ensure that adequate protection shelters are available for use during disaster occurrences.**					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Maintain and expand existing shelter facilities to provide adequate pre-disaster care and space, as needed.	$3,000.00	Local, Red Cross, MCMC, MCCA	Macon County	Tornado/ Thunderstorm	All
Designate and upgrade/retrofit, as necessary, 11 existing public facilities to provide shelter in areas of Macon County where there currently are no shelters, primarily targeting schools and community centers, at a rate of one site every two years.	$37,500.00	Federal, State and Local	All	Tornado/ Thunderstorm	All
Investigate construction of new public shelter facilities in those areas of the county with no shelter facilities as long-term and low-priority task.	$0.00	No funding	Macon County	Tornado/ Thunderstorm	All
Secure funds to continue efforts to assist citizens in constructing private shelters on their land at a rate of seven shelters per year. (Approx. $5,000 per shelter)	$175,000.00	Federal and Private	Macon County	Tornado/ Thunderstorm	All
Work with developers, home builders and contractors to promote construction of a safe room in all new residential development.	$0.00	No funding	All	Tornado/ Thunderstorm	All
Publicize information on locations of existing public shelters and when to use them.	$2,500.00	Local, Red Cross, MCMC, MCCA	All	Tornado/ Thunderstorm	All
Total	$218,000.00				

Goal A: Promote natural hazard mitigation as a means to decrease loss of life, property damage and economic loss during a disaster occurrence.

Objective 3: **Develop and adopt, or amend, and enforce land use regulations that support natural hazard mitigation efforts throughout Macon County.**					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Incorporate and enforce flood management ordinances in all county and municipal zoning ordinances.	$0.00	Local funds	All	Flooding	All
Ensure that future land use and growth plans do not extend into flood plain areas.	$0.00	Local funds	All	Flooding	All
Develop long-range growth and development plan for Macon County to address permitting and construction process in unincorporated areas	$40,000.00	Federal and Local	Macon County	Wildfire	1, 2
Develop long-range growth and development plan for Macon County to address permitting and construction process in unincorporated areas	$40,000.00	Federal and Local	Macon County	Flooding	1, 2
Ensure that the Macon County Emergency Management Agency is involved in the review of all local future growth and development plans.	$12,500.00	Local funds	All	All	All
Utilize AEMA Flood Relocation Program to remove commercial and residential structures from flood prone areas, if necessary in the future.	$0.00	No funding	All	Flooding	All
Total	$52,500.00				

Goal A: Promote natural hazard mitigation as a means to decrease loss of life, property damage and economic loss during a disaster occurrence.

Objective 4: Implement fire protection measures to decrease potential for loss of life and property damage.					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Develop and utilize zoning ordinances to manage development in urban fringe areas.	$0.00	Local funds	All	Wildfire	All
Establish education program to provide information on methods to construct buffers and fire breaks on private property in urban interface areas.	$0.00	Local funds	Macon County	Wildfire	All
Support Alabama Forestry Commission efforts to help educate private landowners to protect their own and others property through construction of fire lanes and fire breaks on forested property, making landowners aware of both their responsibility and liability.	$0.00	Local funds	Macon County	Wildfire	All
Total	$0.00				All

Goal A: Promote natural hazard mitigation as a means to decrease loss of life, property damage and economic loss during a disaster occurrence.

Objective 5: **Limit impact of heat and drought on human health, property damage and agricultural losses**					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Work with Lower Tallapoosa River Watershed Management Committee to implement public awareness and education efforts about water conservation and water quality.	$0.00	Local	All	Extreme Heat / Drought	All
Work with Macon County medical providers to develop emergency supplies and education program.	$0.00	Local	All	Extreme Heat / Drought	All
Work with Macon County Farm Service Agency and County Extension Service to establish a drought information center.	$0.00	Local	Macon County	Extreme Heat / Drought	All
Develop a drought and heat indicator plan and warning system, that includes a response strategy.	$0.00	Local	All	Extreme Heat / Drought	All
Develop print public service announcements	$2,500.00	Local	Macon County	Extreme Heat / Drought	All
Total	$2,500.00				

Goal A: Promote natural hazard mitigation as a means to decrease loss of life, property damage and economic loss during a disaster occurrence.

Objective 6: Improve infrastructural facilities to limit the impact of natural hazard events.					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Elevate and pave county roads that have a high potential for flooding and/or washing during flood events to provide access and limit erosion and sedimentation.	$0.00	Federal, State and Local	Macon County	Flooding	All
St. Marks Road - 2 miles	$200,000.00				All
Pecola Road - .75 miles	$75,000.00				All
County Road 2 – 10 miles from US Hwy 80 to Hardaway	$1,999,999.00				All
County Road 67 – 7 miles	$700,000.00				All
County Road 73 – 3.5 miles	$350,000.00				All
Continue bridge inspection and improvement efforts to prevent washing and/or failure during flood events.	$7,000,000.00	Federal, State and Local	Macon County	Flooding	All
Maintain all roads to allow constant access for emergency response, recovery and repair, and continuity of delivery services at eight roads per year.	$5,000,000.00	County	Macon County	All	All
Total	$15,324,999.00				

Objective 7: Prepare and provide for emergency utility services before and during a disaster event.					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Investigate need for emergency water supply during disaster events	$0.00	Macon Co EMA	All	All	All

Limit non-critical water consumption during severe drought conditions	$0.00	Water Suppliers	All	Extreme Heat / Drought	All
Total	$0.00				

Goal B: Provide on-going support of the Macon County Emergency Management efforts to make Macon County less vulnerable to natural disasters.

Objective 1: **Ensure that the Macon County Hazard Mitigation Plan remains current and is implemented.**					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Update the Macon County Hazard Mitigation Plan every five years as required by regulations.	$7,000.00	Macon Co EMA	Macon County	All	All and 5
Communicate with the general public on a periodic basis to provide a status report of the plan and any project or programs that are a result of the plan and its implementation.	$12,500.00	Macon Co EMA	Macon County	All	All and 5
Municipalities should provide local human resources or other resources, such as materials and supplies, to assist in implementation of the Macon County Hazard Mitigation Plan and its regular update.	$25,000.00	Local	Franklin	All	All and 5
Municipalities should provide local human resources or other resources, such as materials and supplies, to assist in implementation of the Macon County Hazard Mitigation Plan and its regular update.	$25,000.00	Local	Notasulga	All	All and 5
Municipalities should provide local human resources or other resources, such as materials and supplies, to assist in implementation of the Macon County Hazard Mitigation Plan and its regular update.	$25,000.00	Local	Shorter	All	All and 5
Municipalities should provide local human resources or other resources, such as materials and supplies, to assist in implementation of the Macon County Hazard Mitigation Plan and its regular update.	$25,000.00	Local	Tuskegee	All	All and 5
Total	$44,500.00				

Goal B: Provide on-going support of the Macon County Emergency Management efforts to make Macon County less vulnerable to natural disasters.

Objective 2: **Improve coordination and communication between emergency response organizations and highly vulnerable entities.**					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Designate a central emergency coordinator in each municipality and community to better facilitate communications with the Macon County Emergency Management Agency.	$0.00	No funding	All	All	All
Provide for incident command training for the local emergency coordinators and other responders.	$2,000.00	Local	All	All	All
Develop an on-going cycle to provide regular updates to Macon County Commission, municipal councils, Fire Chiefs Association, utility boards and other emergency responders.	$7,500.00	Local	Macon County	All	All
Total	$9,500.00				

Goal C: Educate general population about natural hazards and hazard mitigation options.

Objective 1: **Establish and implement hazard mitigation public awareness program.**					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Cooperate and coordinate with various agencies and entities to assist with distribution of information and materials, including the Tuskegee Area Chamber of Commerce, Tuskegee University, DHR, Macon County Community Action, churches, municipalities, schools, etc.	$2,500.00	Local	Macon County	All	All
Develop a portable information booth for display at local fairs and public events to distribute materials.	$5,500.00	Local	Macon County	All	4, 5
Create and distribute magnets that list all emergency contact information of local responding agencies	$2,500.00	Local	Macon County	All	All
Total	$10,500.00				

Goal C: Educate general population about natural hazards and hazard mitigation options.

Objective 2: **Establish and promote disaster prevention education programs, utilizing all forms of media (e.g., print, TV, internet websites - government and related non-governmental) to help distribute information and materials.**					
Action	**Total**	**Source**	**Jurisdiction**	**Hazard**	**Year**
Investigate working with Macon County Extension System to develop adult training/certification courses on land management (best management practices) to decrease property damage during natural disaster events.	$20,000.00	USDA, Local	All	All	All
Develop broadcast public service announcements for airing on local television and radio stations.	$15,000.00		Macon County	All	3
Develop print public service announcements for publication in local newspaper and agency newsletters.	$2,500.00	Local	Macon County	All	All
Develop information website with links from Macon County Commission and municipal websites.	$4,400.00	Local	Macon County	All	2
Incorporate hazard awareness and mitigation into the curricula of local schools.	$7,000.00	Board of Education	Macon County	All	3, 4, 5
Develop coloring and activity books at four appropriate age levels for widespread annual distribution.	$6,500.00	Local	Macon County	All	2, 3, 4, 5
Total	$55,400.00				

CHAPTER 6:
PLAN MAINTENANCE AND REVIEW

The *Macon County Natural Hazard Mitigation Plan* was developed with the guidance of the Macon County Local Emergency Planning Committee so that the committee would be aware of the plan and its contents and, therefore, could ensure its ongoing implementation, review and amendment, as necessary. The Macon County LEPC is a standing committee comprised of members representing each of the local governments located in Macon County, along with both public and private representatives that have a vital stake in emergency management. The Macon County LEPC will continue to meet on a regular basis for other emergency management matters. The continued review and update of the *Macon County Natural Hazard Mitigation Plan* shall become an additional responsibility of the Macon County LEPC.

The plan is developed on a five-year time frame. It is intended to be reviewed on an annual basis for any necessary amendments, and to undergo a major review and update every five years. In this way, Macon County will have an ongoing mitigation plan and process.

The Macon County EMA staff will continue to serve as the LEPC's facilitator responsible for holding regularly scheduled meetings, assigning specific tasks necessary to monitor and update the plan to committee members, and serving as the committee's liaison with those assigned implementation responsibilities. The facilitator will also serve as the committee's liaison with participating municipalities and the Macon County Commission. New committee members may be nominated by the EMA Director and then approved by the entire committee.

After the initial *Macon County Natural Hazard Mitigation Plan* is finalized and adopted, the LEPC shall meet at least once per year to review and update the plan, as necessary. The following will stand as guidelines for those meetings in terms of addressing hazard mitigation:

- Each member or a designated alternate must attend at least one meeting a year.
- A list of completed and ongoing mitigation projects will be reviewed at each meeting.
- Previously implemented mitigation actions will be evaluated for effectiveness.
- There will be an update on the status of current mitigation projects.
- Changing land use patterns and new developments will be addressed.
- Any additions or changes in risk assessment and/or risk vulnerability will be identified.
- Any other concerns will be addressed, possible future mitigation plans discussed, and any new projects will be adopted by signed resolution.

The facilitator will schedule the meetings at a time and location convenient to all of the LEPC members. All meetings will be advertised in the local newspaper and open to the public for their comments and suggestions.

In the event that modifications to the plan are required, the LEPC will oversee, recommend, and/or approve all revisions and amendments to the *Macon County Natural Hazards Mitigation Plan*. The LEPC will then submit all revisions, except for mitigation projects or activities not of a countywide nature, for adoption (via signed resolutions) by all of the jurisdictions. Any new projects (developed and/or proposed prior to the first five-year and between subsequent five-year major updates), not of a countywide nature, will be added to the Macon County Natural Hazards Mitigation Plan upon recommendation of the LEPC and adoption (via signed resolution) by the appropriate governing body where the proposed project is to be located. A copy of and/or access to any and all adopted plan revisions will be provided to all LEPC members, the Macon County Commission, and each of the municipalities.

At the end of the five-year cycle of the Mitigation Strategy, the Committee will oversee a major update to the plan that follows the Federal planning criteria in effect at the time of the update. The updated plan will again be submitted to the AEMA and FEMA for approval.

Implementation of the plan will be the responsibility of a number of local governments and agencies. For this reason, two public workshops were held to inform citizens about the contents of the plan. For each mitigation action item, a responsible agency has been identified. Furthermore, the implementation of the action items was outlined by year for the first five years. The Macon County EMA will coordinate implementation efforts with each of the local governments and with other agencies as necessary.

A critical part of maintaining an effective and relevant natural hazard mitigation plan is ongoing public review and comment. The LEPC is dedicated to direct involvement of all Macon County citizens in providing input on the plan throughout the five-year implementation cycle.

A hard copy of the plan will be available for viewing at all appropriate agencies throughout Macon County, at minimum to include: the Macon County Emergency Management Agency office, the Macon County Courthouse, the offices of the Clerks of each municipality, and County or municipal government websites, if available. After adoption, a public information notice in the local newspaper will inform the public that the plan may be viewed at these locations.

Public meetings will be held when significant modifications to the plan are required or when otherwise deemed necessary by the LEPC. The public will be able to express their ideas, concerns, and opinions at the meetings. At a minimum, two public hearings will be held during the five-year update process: one during the drafting stage of the five-year update, and one to present a draft of the final plan to the public prior to adoption.

If deemed appropriate by the Director of the Macon County EMA and once adopted, this plan shall be considered as an Annex to the Macon County Emergency Operations Plan, which is administered through the Macon County Emergency Management Agency office. In addition to adopting the *Macon County Natural Hazards Mitigation Plan* in its entirety, it is recommended that each adopting jurisdiction incorporate this plan or its elements into their own respective existing or future planning documents, if and when appropriate. Examples of such existing or future planning documents may include, but are not limited to: countywide or municipal comprehensive and/or land use plans and regulations/ordinances; countywide or municipal floodplain management plans; countywide or municipal capital improvement plans and budgets; and any other county or municipal disaster, readiness, and/or contingency plans. The process and/or procedure used by each jurisdiction in adopting and incorporating the *Macon County Natural Hazards Mitigation Plan* or its elements into their own planning documents shall be the same as that delineated in the *Code of Alabama, 1975, as amended* and any applicable local ordinances and regulations. The Macon County EMA staff and/or the planning staff of the South Central Alabama Development Commission will provide technical assistance when requested.

APPENDIX A:
RESOLUTIONS OF ADOPTION

The *Macon County Natural Hazard Mitigation Plan* has been formally adopted by resolution by the Macon County Commission, and the governing bodies of the Town of Franklin, the Town of Notasulga, the Town of Shorter, and the City of Tuskegee. Copies of the adopting resolutions are found in this appendix. Dates of adoption are as listed below.

Macon County ..... September 13, 2004
Town of Franklin..... September 14, 2004
Town of Notasulga ..... September 20, 2004
Town of Shorter ..... September 9, 2004
City of Tuskegee..... September 15, 2004

A RESOLUTION TO ADOPT
THE MACON COUNTY NATURAL HAZARD MITIGATION PLAN

WHEREAS, the Macon County Emergency Management Agency has engaged in extensive studies of the natural hazards facing Macon County; and,

WHEREAS, the Macon County Emergency Management Agency, with guidance from the Macon County Local Emergency Planning Committee, has prepared the *Macon County Natural Hazard Mitigation Plan*; and,

WHEREAS, the Macon County Commission is formally represented by a delegation on the Macon County Local Emergency Planning Committee; and,

WHEREAS, the goals of this plan are to reduce the loss of life, decrease repetitive property losses due to natural disasters, and provide leadership and coordination to encourage all levels of government and public and private organizations in Macon County to undertake hazard mitigation activities in minimizing potential disasters and to employ mitigation in the recovery following disasters; and,

WHEREAS, the strategies of this plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and,

WHEREAS, the adoption of the *Macon County Natural Hazard Mitigation Plan* would be in the best interest and protection of the citizens of Macon County.

NOW THEREFORE BE IT RESOLVED by the County Commission of Macon County, Alabama that the document entitled the *Macon County Natural Hazard Mitigation Plan* and all official maps pertaining thereto, and with any minor revisions as made by the Alabama Emergency Management Agency and the Federal Emergency Management Agency upon their review, are hereby adopted this 13th day of September, 2004.

ADOPTED AND APPROVED by the County Commission of Macon County, Alabama on the 13th day of September, 2004.

Delivered to and approved by the County Commission Chairman on this_____day of September, 2004.

_____
Chairman

Attest:

_____ _____
Clerk/Treasurer Date

A RESOLUTION TO ADOPT
THE MACON COUNTY NATURAL HAZARD MITIGATION PLAN

WHEREAS, the Macon County Emergency Management Agency has engaged in extensive studies of the natural hazards facing Macon County; and,

WHEREAS, the Macon County Emergency Management Agency, with guidance from the Macon County Local Emergency Planning Committee, has prepared the *Macon County Natural Hazard Mitigation Plan*; and,

WHEREAS, the Town of Franklin is formally represented by a delegation on the Macon County Local Emergency Planning Committee; and,

WHEREAS, the goals of this plan are to reduce the loss of life, decrease repetitive property losses due to natural disasters, and provide leadership and coordination to encourage all levels of government and public and private organizations in Macon County to undertake hazard mitigation activities in minimizing potential disasters and to employ mitigation in the recovery following disasters; and,

WHEREAS, the strategies of this plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and,

WHEREAS, the adoption of the *Macon County Natural Hazard Mitigation Plan* would be in the best interest and protection of the citizens of the Town of Franklin.

NOW THEREFORE BE IT RESOLVED by the Town of Franklin, Alabama that the document entitled the *Macon County Natural Hazard Mitigation Plan* and all official maps pertaining thereto, and with any minor revisions as made by the Alabama Emergency Management Agency and the Federal Emergency Management Agency upon their review, are hereby adopted this 14th day of September, 2004.

ADOPTED AND APPROVED by the Town Council of the Town of Franklin, Alabama on the 14th day of September, 2004.

Delivered to and approved by the Mayor on this_____day of September, 2004.

_____
Mayor

Attest:

_____ _____
Clerk/Treasurer Date

A RESOLUTION TO ADOPT
THE MACON COUNTY NATURAL HAZARD MITIGATION PLAN

WHEREAS, the Macon County Emergency Management Agency has engaged in extensive studies of the natural hazards facing Macon County; and,

WHEREAS, the Macon County Emergency Management Agency, with guidance from the Macon County Local Emergency Planning Committee, has prepared the *Macon County Natural Hazard Mitigation Plan*; and,

WHEREAS, the Town of Notasulga is formally represented by a delegation on the Macon County Local Emergency Planning Committee; and,

WHEREAS, the goals of this plan are to reduce the loss of life, decrease repetitive property losses due to natural disasters, and provide leadership and coordination to encourage all levels of government and public and private organizations in Macon County to undertake hazard mitigation activities in minimizing potential disasters and to employ mitigation in the recovery following disasters; and,

WHEREAS, the strategies of this plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and,

WHEREAS, the adoption of the *Macon County Natural Hazard Mitigation Plan* would be in the best interest and protection of the citizens of the Town of Notasulga.

NOW THEREFORE BE IT RESOLVED by the Town of Notasulga, Alabama that the document entitled the *Macon County Natural Hazard Mitigation Plan* and all official maps pertaining thereto, and with any minor revisions as made by the Alabama Emergency Management Agency and the Federal Emergency Management Agency upon their review, are hereby adopted this 20th day of September, 2004.

ADOPTED AND APPROVED by the Town Council of the Town of Notasulga, Alabama on the 20th day of September, 2004.

Delivered to and approved by the Mayor on this_____day of September, 2004.

_____
Mayor

Attest:

_____ _____
Clerk/Treasurer Date

A RESOLUTION TO ADOPT
THE MACON COUNTY NATURAL HAZARD MITIGATION PLAN

WHEREAS, the Macon County Emergency Management Agency has engaged in extensive studies of the natural hazards facing Macon County; and,

WHEREAS, the Macon County Emergency Management Agency, with guidance from the Macon County Local Emergency Planning Committee, has prepared the *Macon County Natural Hazard Mitigation Plan*; and,

WHEREAS, the Town of Shorter is formally represented by a delegation on the Macon County Local Emergency Planning Committee; and,

WHEREAS, the goals of this plan are to reduce the loss of life, decrease repetitive property losses due to natural disasters, and provide leadership and coordination to encourage all levels of government and public and private organizations in Macon County to undertake hazard mitigation activities in minimizing potential disasters and to employ mitigation in the recovery following disasters; and,

WHEREAS, the strategies of this plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and,

WHEREAS, the adoption of the *Macon County Natural Hazard Mitigation Plan* would be in the best interest and protection of the citizens of the Town of Shorter.

NOW THEREFORE BE IT RESOLVED by the Town of Shorter, Alabama that the document entitled the *Macon County Natural Hazard Mitigation Plan* and all official maps pertaining thereto, and with any minor revisions as made by the Alabama Emergency Management Agency and the Federal Emergency Management Agency upon their review, are hereby adopted this 9th day of September, 2004.

ADOPTED AND APPROVED by the Town Council of the Town of Shorter, Alabama on the 9th day of September, 2004.

Delivered to and approved by the Mayor on this_____day of September, 2004.

_____
Mayor

Attest:

_____ _____
Clerk/Treasurer Date

A RESOLUTION TO ADOPT
THE MACON COUNTY NATURAL HAZARD MITIGATION PLAN

WHEREAS, the Macon County Emergency Management Agency has engaged in extensive studies of the natural hazards facing Macon County; and,

WHEREAS, the Macon County Emergency Management Agency, with guidance from the Macon County Local Emergency Planning Committee, has prepared the *Macon County Natural Hazard Mitigation Plan*; and,

WHEREAS, the City of Tuskegee is formally represented by a delegation on the Macon County Local Emergency Planning Committee; and,

WHEREAS, the goals of this plan are to reduce the loss of life, decrease repetitive property losses due to natural disasters, and provide leadership and coordination to encourage all levels of government and public and private organizations in Macon County to undertake hazard mitigation activities in minimizing potential disasters and to employ mitigation in the recovery following disasters; and,

WHEREAS, the strategies of this plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and,

WHEREAS, the adoption of the *Macon County Natural Hazard Mitigation Plan* would be in the best interest and protection of the citizens of the City of Tuskegee.

NOW THEREFORE BE IT RESOLVED by the City of Tuskegee, Alabama that the document entitled the *Macon County Natural Hazard Mitigation Plan* and all official maps pertaining thereto, and with any minor revisions as made by the Alabama Emergency Management Agency and the Federal Emergency Management Agency upon their review, are hereby adopted this 15th day of September, 2004.

ADOPTED AND APPROVED by the City Council of the City of Tuskegee, Alabama on the 15th day of September, 2004.

_____ _____
Council President Date

Attest:

_____ _____
Clerk/Treasurer Date

Delivered to and approved by the Mayor on this_____day of September, 2004.

_____
Mayor

APPENDIX B:
MITIGATION STRATEGY COSTS

Macon County Hazard Mitigation Plan Cost Summary

Macon County Hazard Mitigation Plan Cost Allocation by Funding Sources

Macon County Hazard Mitigation Plan Cost Summary

	FY 04-05	FY05-06	FY 06-07	FY 07-08	FY 08-09
Establish full warning system	$40,000.00	$30,000.00	$40,000.00	$30,000.00	$30,000.00
Ensure adequate protection shelters	$44,000.00	$43,500.00	$43,500.00	$43,500.00	$43,500.00
Land use regulations to support hazard mitigation	$22,500.00	$22,500.00	$2,500.00	$2,500.00	$2,500.00
Fire protection measures	$0.00	$0.00	$0.00	$0.00	$0.00
Limit impact of heat and drought	$500.00	$500.00	$500.00	$500.00	$500.00
Infrastructural improvements	$6,625,000.00	$2,200,000.00	$2,166,666.00	$2,166,666.00	$2,166,667.00
Emergency utility services	$0.00	$0.00	$0.00	$0.00	$0.00
Implementation of Hazard Mitigation Plan	$8,000.00	$8,000.00	$8,000.00	$8,000.00	$12,500.00
Coordination / Communication among emergency agencies	$1,900.00	$1,900.00	$1,900.00	$1,900.00	$1,900.00
Public awareness program	$1,000.00	$1,000.00	$1,000.00	$6,000.00	$1,500.00
Disaster prevention education programs	$4,500.00	$10,600.00	$26,100.00	$7,100.00	$7,100.00
Total	**$6,747,400.00**	**$2,318,000.00**	**$2,290,166.00**	**$2,266,166.00**	**$2,266,167.00**
Grand Total					**$15,887,899.00**
Total without road improvements	**$122,400.00**	**$118,000.00**	**$123,500.00**	**$99,500.00**	**$99,500.00**
Grand Total without road improvements					**$562,900.00**

Macon County Hazard Mitigation Plan Cost Allocation by Funding Sources

Task	Federal, State	County Comm.	Cities	Macon County EMA	Local Donations	Private	Total
Warning plan and sirens	$112,500.00	$7,500.00	$30,000.00				$150,000.00
Central emergency coordinator per community	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Visibility warning signs							$0.00
Investigate telephone messaging system	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Existing shelter improvements and maintenance		$250.00	$750.00		$2,000.00		$3,000.00
Designate and upgrade existing facilities for shelters	$28,125.00	$0.00	$0.00	$9,375.00	$0.00	$0.00	$37,500.00
Investigate construction of new shelters	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Construction of private shelters	$87,500.00	$0.00	$0.00	$0.00	$0.00	$87,500.00	$175,000.00
Promote safe rooms in new construction	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Publicize shelter locations				$1,250.00	$1,250.00		$2,500.00
Flood management ordinances	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Limit development plans in flood plains	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Limit development plans in fire hazard areas	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Review of all future growth and development plans	$0.00	$0.00	$0.00	$12,500.00	$0.00	$0.00	$12,500.00
Flood relocation program, as necessary	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Fire Protection Measures							$0.00
Heat and Drought Protection Measures							$0.00
Road elevation and paving	$2,647,500.00	$882,500.00					$3,530,000.00
Emergency utility services							$0.00
Update Macon County Hazard Mitigation Plan	$0.00	$0.00	$0.00	$7,000.00	$0.00	$0.00	$7,000.00
Updates to general public	$0.00	$0.00	$0.00	$12,500.00	$0.00	$0.00	$12,500.00
Local gov't support to Mitigation Plan Implementation	$0.00	$5,000.00	$20,000.00	$0.00	$0.00	$0.00	$25,000.00
Incident command training	$0.00	$0.00	$1,600.00	$400.00	$0.00	$0.00	$2,000.00
Updates to governments and agencies	$0.00	$0.00	$0.00	$7,500.00	$0.00	$0.00	$7,500.00
Cooperation between agencies to distribute	$0.00	$0.00	$0.00	$1,500.00	$1,000.00	$0.00	$2,500.00
Portable display booth	$0.00	$0.00	$0.00	$5,500.00	$0.00	$0.00	$5,500.00
Magnets	$0.00	$0.00	$0.00	$1,000.00	$1,500.00	$0.00	$2,500.00
Extension training/certification courses	$15,000.00	$0.00	$0.00	$5,000.00	$0.00	$0.00	$20,000.00
Broadcast PSA							$0.00
Print PSA	$0.00	$0.00	$0.00	$2,500.00	$0.00	$0.00	$2,500.00
EMA Website	$0.00	$0.00	$0.00	$4,400.00	$0.00	$0.00	$4,400.00
Incorporate hazard mitigation into local schools	$5,250.00	$1,750.00	$0.00	$0.00	$0.00	$0.00	$7,000.00
Coloring and activity books	$0.00	$0.00	$0.00	$3,250.00	$3,250.00	$0.00	$6,500.00
Total	**$2,895,875.00**	**$897,000.00**	**$52,350.00**	**$73,675.00**	**$9,000.00**	**$87,500.00**	**$4,015,400.00**
Total without road improvements	**$248,375.00**	**$14,500.00**	**$52,350.00**	**$73,675.00**	**$9,000.00**	**$87,500.00**	**$485,400.00**